

# DUN'S REVIEW

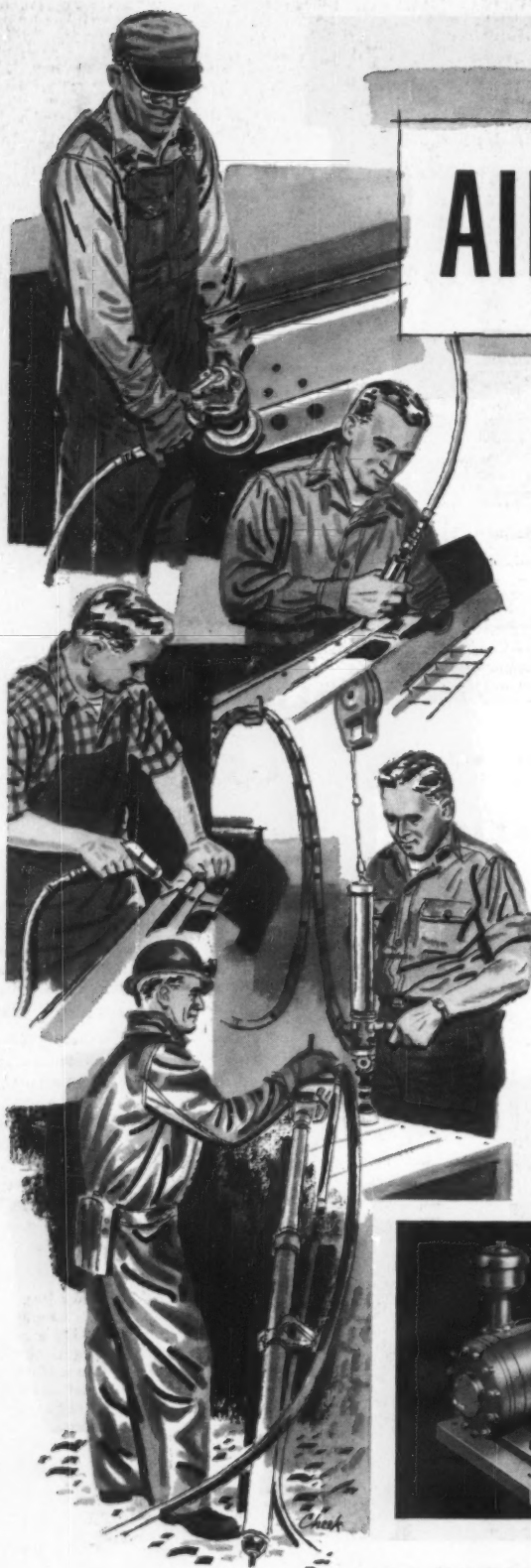
## and Modern Industry

A *Dun & Bradstreet* PUBLICATION

APRIL 1955  
75 cents



IN THIS ISSUE: BALANCING AMERICA'S PRODUCTIVITY  
WATER—INDUSTRY'S PROFITABLE PROBLEM CHILD



# AIR AT WORK

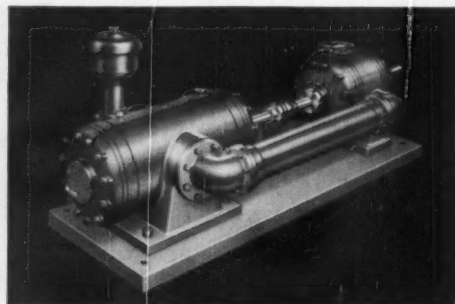
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top production from it...

Low or fluctuating air pressures are common problems in plant air supply. Production men are beating these problems with the Allis-Chalmers rotary type compressor — the two-stage *Ro-Flo* unit.

This is the modern design that makes possible new and important efficiency gains in plant air systems. Instead of using one large compressor, several small units can be used — thus shortening air lines, cutting line drop. Two-stage *Ro-Flo* units can be placed anywhere. No heavy foundation is needed because rotary design practically eliminates vibration.

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To learn how two-stage *Ro-Flo* compressors can help you modernize your air supply, contact your A-C office or write Allis-Chalmers, General Machinery Division, Milwaukee 1, Wisconsin.



Two-stage *Ro-Flo* compressors in pressures from 60 to 125 pounds gauge, and volumes from 250 to 1800 cubic feet per minute.

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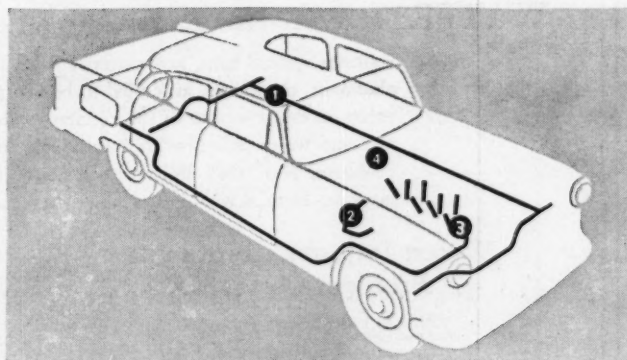
A-4686

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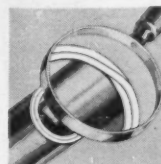
2. Oil lines of leakproof Bundyweld help keep oil where it belongs. No costly repairs or ruined engine for you.

3. Bundyweld helps gasoline lines stay smooth, leakproof despite battering from flying stones, punishing vibration.

4. Tough, lightweight push rods of Bundyweld help engineers produce more powerful overhead-type engines.

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Fortunately for you, the manufacturers of today's high-speed cars recognize the hazards your automobile undergoes. That's why they equipped your car with brake lines of rugged, dependable, double-walled Bundyweld STEEL Tubing. Only STEEL tubing is tough enough to take such punishment and last the lifetime of your car. In fact, Bundyweld's strength far exceeds any shock-loading pressures involved in emergency braking. No wonder Bundyweld is used in 95% of today's cars in an average of 20 applications each.



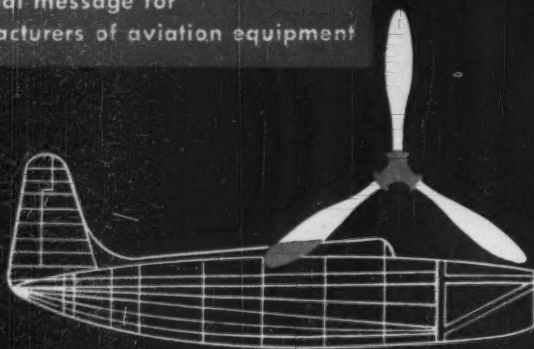
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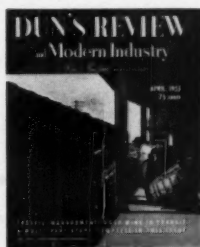


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*Our Cover*

At Houston, Texas, the nation's second largest port, tonnage-wise, bales of cotton, grown from California to the Mississippi River, are loaded for shipment to mills in principal cities, foreign and domestic.

COLOR TRANSPARENCY BY RUDY ARNOLD

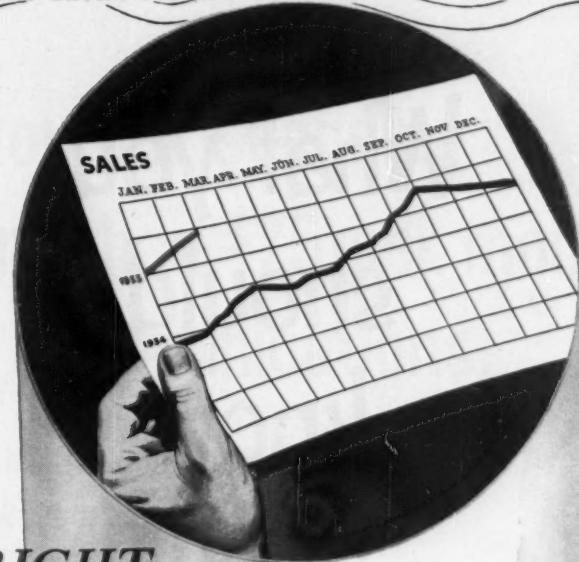
**Next Month:**

*Management's Responsibility to Government*

In this article, Clarence B. Randall, Chairman of the Board of Inland Steel Company, points up the advantages and satisfactions that can be obtained when business men take an active interest in the workings of government, be it national, state, or local. Top management has a growing stake in the affairs of the country and the community.

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DIAMOND pattern  
A.W. CUT NAILS  
MINE PRODUCTS  
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COAL CHEMICALS

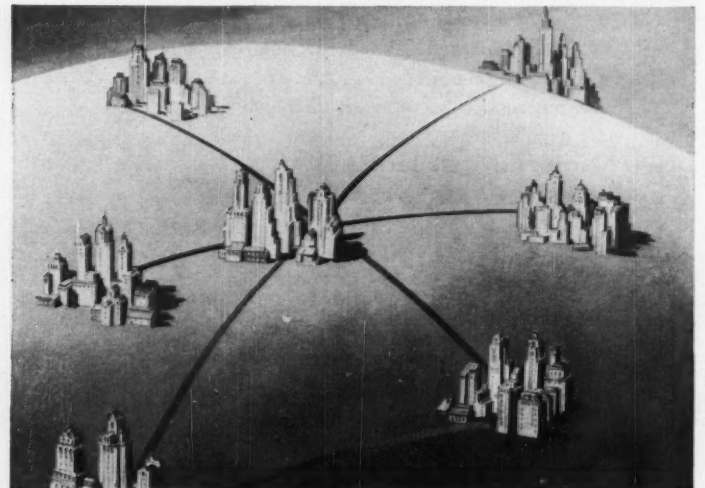
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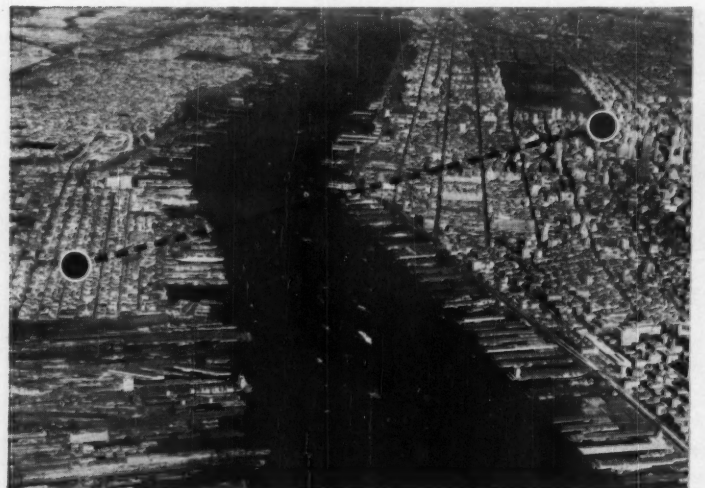
What you  
should  
know  
about  
**WESTERN  
UNION**  
Private  
Wire  
Services!



- 1** At each end of your private telegraph line, teleprinters send and receive messages. Anyone who uses a typewriter can operate a teleprinter, the heart of nearly every system, for instantaneous contact between points where telegraphic connection is desired.



- 2** Almost 4,000 Custom-Built Systems are now in use, each engineered to the specific communication needs of a specific company. You may require a system covering thousands of miles, connecting branch offices, plants and warehouses all over the country . . .



- 3** . . . or your needs may be simpler—requiring only a two-station system to connect a plant with your main office, or to link two divisions in neighboring cities or states. Either way, chances are you can save time and money with a Western Union System.





4 In large systems, message traffic is channeled through this ingenious electronic "control center." Pushbutton operation permits one attendant to handle and re-route a tremendous volume of traffic per day . . . directly to any and all points in the system.



5 Medium-size systems use a semi-automatic routing center. Incoming messages, on tape, are picked up by the attendant who notes the destination and places the tape in the correct sending slot. A push of a button speeds the message on its way.



6 In addition to handling general messages, all types of business paper work such as orders, tabulations, accounting records, inventory forms, may be sent over your private telegraph system . . . greatly increasing its value to company operation.

## If you are spending more than \$75 per month for communications,

*both oral and written, between any two points, ask yourself these questions:*

- Would instantaneous, continuous telegraphic contact between any two or more points—branch offices, warehouses, plants, etc.—add to the speed, ease and efficiency of present operations?
- Will a permanent, printed record of all incoming and outgoing communications make for a more orderly handling of the company's business?
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If your answer to any of these questions is "yes," it will pay you to investigate the efficiency and economy of a Western Union Private Wire System. For more complete information on what such a system can do for your business, wire collect for our new booklet covering all types and applications of private wire communications.

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This is all part of what we on the Pennsy call "progressive railroading"—a forward-looking program that thrives on imagination . . . and has solved many a vital shipping problem for industry!

If your company has not given TRUCTRAIN SERVICE a trial, call your nearest PRR Representative today!





*Paul Wooton has spent more than 40 years reporting on the Washington scene. This month the points of interest focus on: Civil defense; guaranteed annual wage; Western European economy; the Fulbright hearings; public construction.*

**P**ROSPERITY to last must not be overdone. That thought is uppermost in the minds of officials. They are doing what they can to warn against too much credit, too many houses, too much speculation. The money is in sight to keep the economy going in high gear, but this is the year which will in all probability indicate the rate the economy will be able to maintain.

If work stoppages can be avoided, Commerce Department officials feel that a gross national product of \$365 billion—equal to that of 1953—is probable. The amount of money actually spent by Government this year may show a further decline, but such decline will be offset by outlays of states and localities. The upturn in the rate of corporate borrowing indicates no let down in the private sector of the economy.

Officialdom thinks it is a healthy sign when so much financing is being done through stock issues rather than by debt issues. Prices now are in a range where the stock market can perform its function of supplying capital to American business.

★ Establishment of a line of succession in industry is a part of civil defense planning. If the directing head of an industry should be the victim of enemy attack it is felt an understanding as to who should succeed should be on file. The plan should apply to all major divisions within an industry. Dispersal of industry continues to be one of the major concerns of the Office of Defense Mobilization. Fully as important as plant protection is the dispersal of skilled labor. Defense officials take no stock in the idea that atomic weapons mean a 60-day war. They do not believe an initial attack can render the country helpless. The first attacks may be devastating, but the country that recovers first will have an advantage.

★ The controversy over annual wage proposals has brought evidence to Washington that management as well as labor is concerned with greater regularization of work. In this connection, unemployment insurance has a bearing. The progress of unemployment insurance is not as rapid as desired by those concerned. The President has urged the states to revise their laws. The Secretary of Labor has had much to say about the need for modernizing unemployment insurance. A start in that direction at this session of Congress seems probable.

While the annual wage may be feasible in the more stable industries, it is difficult for lawmakers to see how the plan can be made to work in industries where demand for their product fluctuates widely. Few employers are willing to promise something that cannot be recouped.

★ British action in increasing the bank rate was applauded by those responsible for American monetary policy. That action is seen as dealing realistically with a boom that was getting out of hand. It indicated that the British will fight for the pound. Use of the stabilization fund, for the first time, to protect transferable accounts sterling is regarded as a most significant development that cannot help but stimulate American trade as well as world trade generally. London is returning to basic principles. The British are accepting their rôle as bankers.

★ Western Europe has about recovered the economic ground it lost during the war, reports to Washington indicate. The standard of living is rising and definite progress is being made on a broad front. German activity has outrun its labor supply. It is drawing substantial numbers of workers from Italy. Inflation is being gradually corrected. The Bank of Norway was the last to move, but it, too, has now cracked down.

★ Credit is being given the press for a substantial contribution to economic education. The present generation has an understanding of economic processes that exceeds by far the knowledge of such matters a few decades ago. This is regarded as a safeguard against the building up of conditions such as existed in 1929 and the exercise of unwise policies in checking recession when it develops.

★ Efforts to make a political football of a vital issue such as the stabilization of the economy is deplored by many members on each side of the congressional aisles. They have no sympathy with proposals to use strong stimulative measures when the economy is running at a high level. Fortunately, the President has a professional advisory group to which he may turn.

★ It is quite apparent Congress is not going to vote money for highways, schools, or anything else without more control over the handling of funds than local authorities want.

The Treasury is accepting the proposed plans reluctantly. It would be cheaper if the money were appropriated in the regular manner so the Government could borrow on its own security, but the money must be raised in a way that appears to add nothing to the public debt. Such borrowing, nevertheless, is a contingent obligation on the Government that has to pay a higher rate of interest.

★ The most valuable service the Administration has rendered the American people, in the opinion of former majority leader Representative Charles A. Halleck, has been to halt the encroachment of Government on private business. The basic issue at stake in the Dixon-Yates controversy, he says, is whether the Government will "soak" the taxpayers for \$100 million or will enter into an equitable contract with private enterprise for needed power.

★ No one in Government, no stock exchange official, nor anyone else knows when prices of stocks are too high or too low. Price levels are determined by the interplay of factors which converge at the market place. It is the business of Government and of exchange management to make sure the market is free, that it is not manipulated, and that crooked work of any kind is banned. These conclusions were indicated by what transpired at the Fulbright hearings.

*Paul Wooton*

WASHINGTON, D. C.

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# more

Management men are discovering the tremendous production gains and cost savings that result from uninterrupted operation of an entire stamping line. Since Danly Presses offer *maximum freedom from mechanical failure*, lines composed entirely of Danly Presses can produce more finished stampings per shift without work stoppage, without high maintenance costs in time and labor.

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Because press downtime losses affect *your* entire production setup, it will pay to have a Danly Press engineer give you the complete story on how to lick this problem. Write or phone today.

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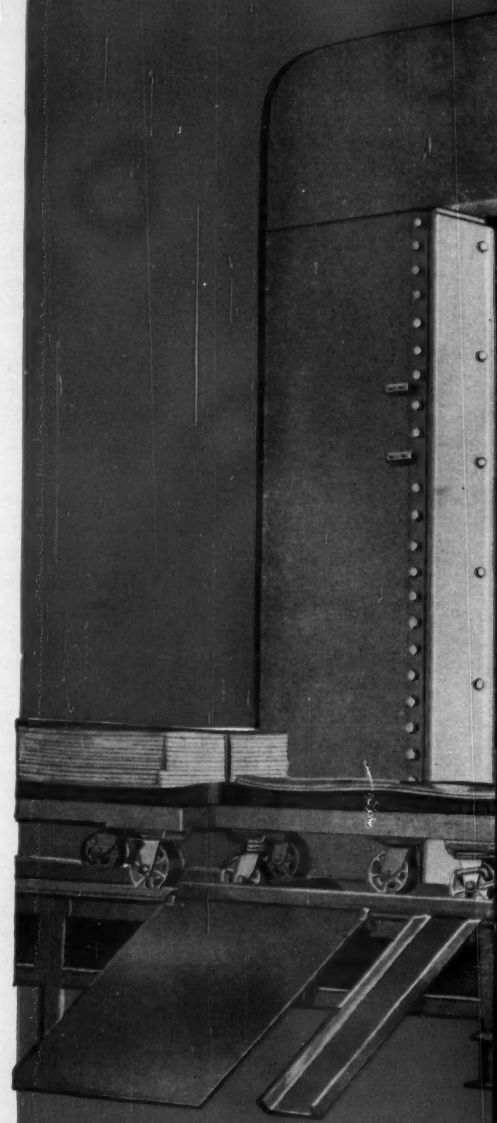
It costs less to run a DANLY PRESS line!

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# A NEW

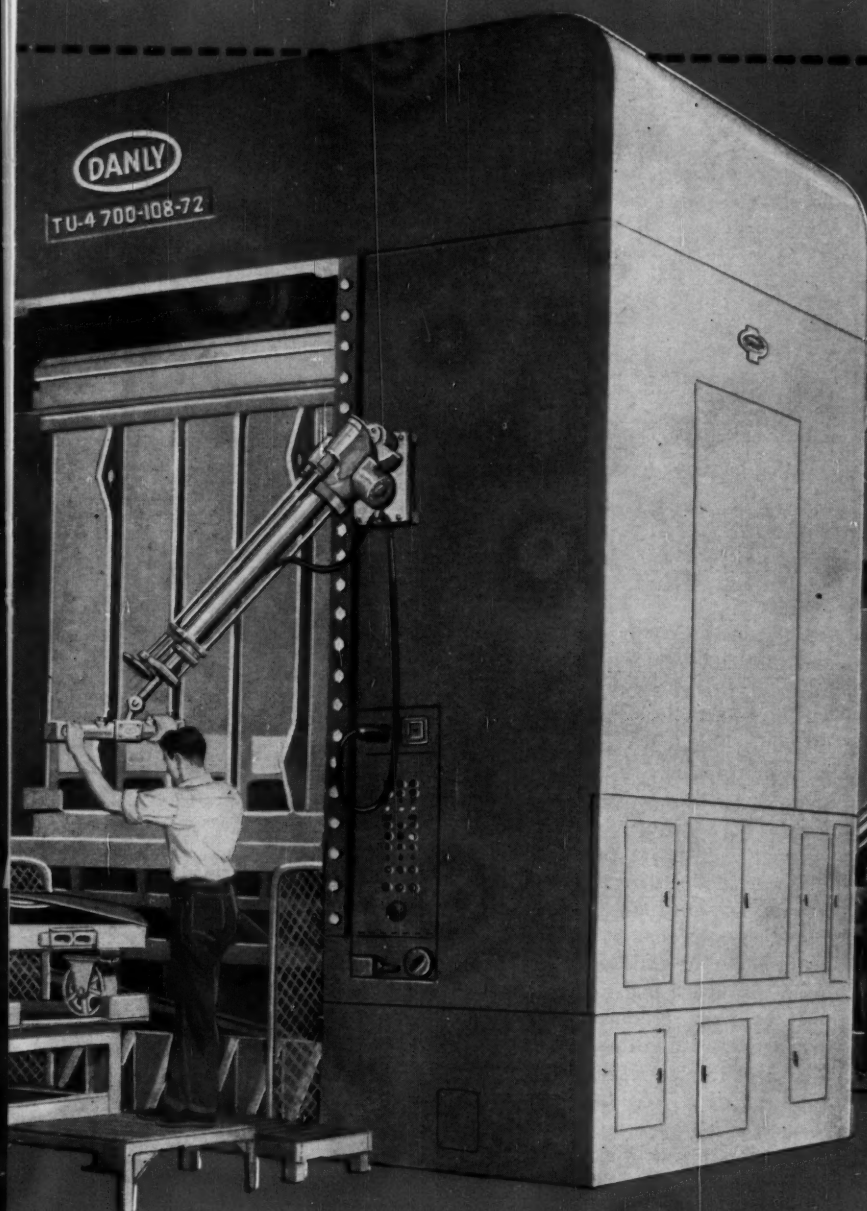
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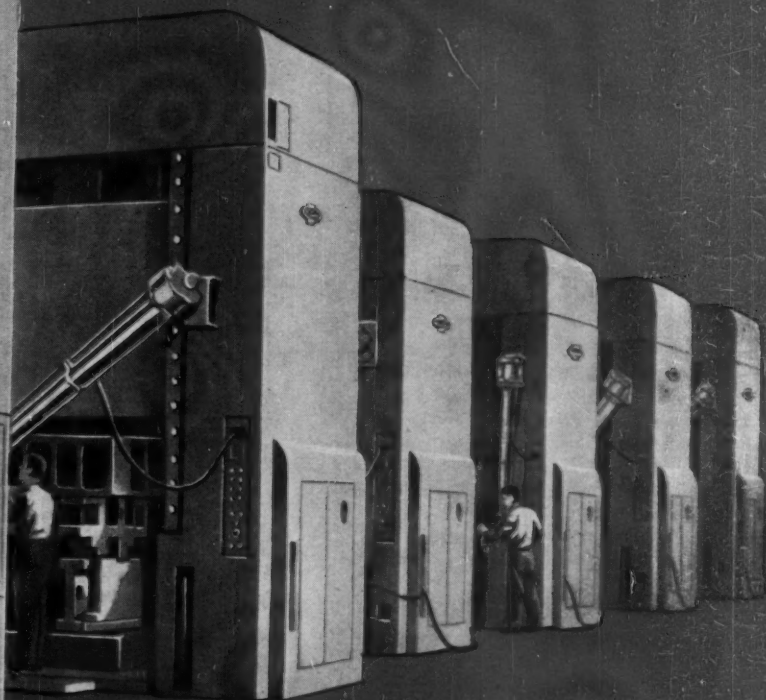




# *finished stampings per shift*



This new Danly line is setting records for production and continuous operation in a leading automotive stamping plant. The adjustable operator control arms offer greater convenience for any setup. Built-in controls reduce the hazard of damage due to aisle traffic. Danly offers any presses you need to make up your line... single, double or triple action... overdrive or underdrive... from 50 to 3000 tons.



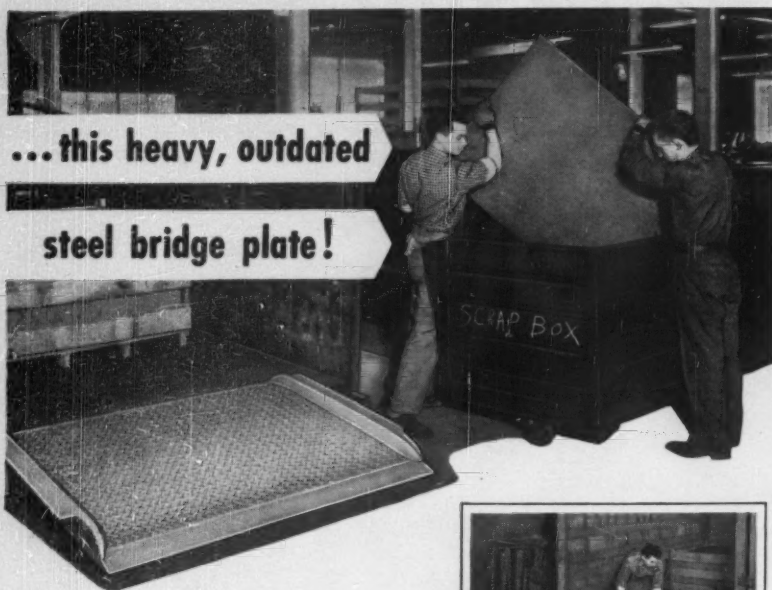
## ***DANLY PRESS LINE***

MODERN INDUSTRY

APRIL 1955

11

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this firm had on its dock was —**



**...this heavy, outdated  
steel bridge plate!**

The initial cost of this heavy steel plate was very little, but through the years it has cost this firm many times its original price! It wasted valuable man-hours, created loading bottlenecks, caused accidents and equipment-load damage. It definitely became the most expensive equipment on the dock!

But not any longer! Now it is being replaced by a light, strong Magliner magnesium dock board, engineered to the specific requirements of this dock and loading operation. Made of the world's lightest structural metal for easy, one-man handling, Magliner magnesium Dock Boards will eliminate costly bottlenecks, and speed shipping-receiving operations. They introduce new, greater efficiency to dock handling, and provide years of safe, dependable and economical service.

Don't let inadequate dock board equipment penalize your operation and drain company profits! It will pay you to get the facts about Magliner dock boards today.



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of DB-204 Today!**



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**"Wherever Dock Boards are Used—Magliners are Preferred"**

**MAGLINE INC. • P. O. BOX 350 • PINCONNING, MICHIGAN**

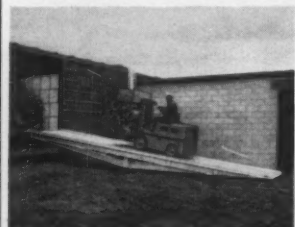
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**MAGNESIUM LIGHT!**  
Easy One Man Handling



**MAGNESIUM STRONG!**  
To Fully Meet Your Equipment-  
Load Requirements



**MOBILE LOADING  
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A loading dock on wheels! Services yard cars or highway trailers. One man moves it. Write for Bulletin DB-211.

**for Rail or Truck**

## VOICE OF INDUSTRY

*Questions regarding scientific management;  
broader education for future leaders; communi-  
cations looks ahead; new frontiers in business.*

*The logic of  
scientific management*



*"If you agree . . . you  
are scientific-manage-  
ment-minded."*

**LAWRENCE A. APPLEY**

*President, American Management Association, before General Management Conference, Los Angeles.*

There are many things in this world considered to be successful and admirable which are not logical. Life itself, I guess, is not very logical. I have to assume, however, that those things which are logical have more chance of success than those things which are not. Let us look at the logic of scientific management.

Does it not seem reasonable that we can do something better if we think about it than if we just let nature take its course? Doesn't it seem reasonable that human effort will be more productive if it is directed toward definite objectives than if it just goes along aimlessly day after day? Wouldn't you agree with me that objectives are more useful and realistic if they are based on study, research, and facts than if they are just a matter of individual opinion?

Doesn't it seem acceptable to you that human beings will perform better if they know what they are supposed to do and how much authority they have in the doing of it? Doesn't it seem logical that they will do it better if they have had a little training and help than if they are left to work it out themselves? Doesn't it make sense that if we study how best to perform a repetitive act that we will find out

how to perform it better than if we just go ahead doing it day after day? Can you deny that human beings will work better when they are participants in what is going on than when they are just blindly following orders? Don't you feel that human effort will be more productive if it is inspired, if it is strongly motivated, and if it is rewarded for successful attainment?

If you agree with these viewpoints, then you are scientific-management-minded. If you do not agree with them, then it is a complete waste of time for you to attempt any phase of scientific management.

*The place of liberal  
arts graduates*



*"... business requires  
the right answer for  
every situation . . ."*

**DAVID F. AUSTIN**

*Executive Vice-President (Commercial)  
U. S. Steel Corporation, at Allegheny  
College, Meadville, Pa.*

We need the man and woman trained to think ahead, trained to resist the immediate pressures which impel one to grapple with problems on a day-to-day basis. We need the man who will know how to interpret the future and mobilize every resource in advance—so that when problems arise, they can be solved with confidence, and handled with dispatch and firmness; for business requires the right answer for every situation which may arise if we are to be fortified to handle properly the ever more complex problems of the future. . . .

*Continued on page 15*





*"It's like waxing your floors with a film of plastic"*

**W**HEN you apply new SUPER WESTWAX it's just like laying down a protective sheet of tough, transparent plastic on your floors.

With NEW SUPER WESTWAX you get

- brilliant gloss
- extra durability
- freedom from discoloration
- easier maintenance

Why? Because this heavy-duty formulation contains —  
West's crystal clear Plastic Emulsion, MIRITE®  
and  
prime #1 yellow Carnauba Wax.

**I**T combines all the features of the finest floor protection in a single wax:

- dries to a hard, mirror gloss
- resists scuffing from traffic
- resists water
- requires no polishing

And SUPER WESTWAX is slip resistant — meets Underwriters' Laboratories requirements for floor treatment materials.

**L**ET a West floor expert demonstrate SUPER WESTWAX on your own floor — show you how easy it is to use.  
No obligation, of course. Just send the coupon.

NEW  
SUPER  
WESTWAX  
contains  
MIRITE®  
PLASTIC  
EMULSION

OLDEST AND LARGEST  
COMPANY OF ITS KIND  
IN THE WORLD



WEST DISINFECTING COMPANY

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Dept. 1

☐ I'd like a free copy of your folder on SUPER WESTWAX.

☐ I'd like to have a WEST representative telephone me for an appointment.

Name \_\_\_\_\_

Position \_\_\_\_\_

(Tear out this coupon and mail it with your letterhead)

# Meat keeps fresh in **PLASTIC "SKIN"**



**E**ver tackle a food package this big and awkward? Refrigeration alone isn't enough. When meat loses its natural moisture, it loses color and freshness. Even a whole carcass shrinks in storage and transportation.

That's the reason for this new wrapping—cotton fabric covered with a coating based on BAKELITE Brand Vinyl Resins. Moisture stays in, meat stays fresh. Since beef, veal, and lamb lose moisture at different rates, the wrappers for

each have different porosities. These wrappers are easily put on with a special sewing tool. One replaces two formerly needed when conventional materials were used. They can be printed with attractive designs and trade-marks.

This is just an example of how BAKELITE Vinyl Resins can improve large-scale packaging. Make sure that your product and its package have all the benefits that these materials can provide. Write Dept. BW-100.

**Vinyl, Polyethylene, Polystyrene, Phenolic and Epoxy Resins for Packaging**

**BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation** UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

**protected by**

Swift and Co.  
"Saniseal" wrapper is  
made of "Lamitex"  
produced by  
**Plastic Film Corp.,**  
New York 17, N. Y.





## RARE BIRDS WE HAVE KNOWN



### THE GOLDEN-THROATED SCREAMER

At one time a common sight around business offices, this bird is becoming very rare indeed. Most observers attribute this to the growing use of M & V Carbon Papers—the high-quality carbon papers that make all copies darned near as clean and sharp as originals. Stands to reason, say these experts, that when hard-to-read carbons are eliminated, Screamers become extinct.

If any of these rare birds are still around your office, ask your office supplier for M & V. And for a free print of the Screamer (suitable for framing), plus samples of M & V Carbon Papers, write to Mittag & Volger, Inc., Park Ridge, N. J.



**CARBON PAPER  
AND  
INKED RIBBONS**

The properly trained man and woman can help tell the story of business. . . .

The thinking man can focus attention on our business illusions, so that we need not wait for a strike, or a war, or some other upheaval, to jolt us out of them. Likewise, he can clarify for Government officials and legislators and the public at large *their* stultifying illusions concerning industry. . . .

It seems to me that the graduates of our liberal arts colleges are particularly well fitted to nurture and publish the thought that workers in American industry are not just unimportant bits of animated gelatin, or automatons, or bundles of automatic reflexes. . . .

America needs men and women who are able to penetrate to the core of truth, brushing aside our naive faith in the mechanism and the gadget, never losing sight of our fundamental purposes in the hurry and pressure of doing. . . .

We need minds at work which are capable of rising above the tangible things we do to earn our daily bread, capable of grasping the intangible principles and truths that keep us moving toward finer, broader lives.

### The future of communications



"... electronic analyzing, data handling, and control mechanisms . . ."

### E. W. ENGSTROM

Executive Vice-President (Research and Engineering), Radio Corporation of America, before American Society of Mechanical Engineers, New York.

It is from greater understandings in communication theory that we may expect important advances. Through the coding of information, we can do simply what otherwise might be too complex or too costly of communications channel width. We can look forward to a system which will type directly on paper the words we speak. We can look for machines and systems which will do our bidding in response to the spoken word. In

*Continued on page 18*

## Six food service problems

## and how to solve them!



PROBLEM	SOLUTION
1 The need for faster service!	1 Actual tests prove more workers can be fed in far less time with paper service than with any other type of service. And workers like it — it gives them more time to eat, to relax.
2 Soaring labor costs!	2 Fewer hands do as much or more work with paper service. Payroll overhead is reduced.
3 High degree of breakage!	3 With paper, there are no glasses or dishes to be dropped and broken — and no expense replacing them.
4 Huge work load!	4 Paper service cuts work load to the barest minimum. Nothing to wash, sterilize or stack away.
5 Excessive waste!	5 Paper service permits big savings on food by permitting accurate cup portioning.
6 The need for complete sanitation!	6 With paper service, each cup and container is used but once, then discarded.

Yes, only paper service provides the "right" answer to all these food service problems . . . and

only Lily\* provides a complete paper service for every type of operation . . . mobile cart, snack bar or cafeteria. In all, there are more than 500 different sizes and types of Lily Cups, Containers, Dishes and Plates to meet every food service need. Write us today for samples and details — without obligation.



## LILY-TULIP CUP CORPORATION

122 East 42nd Street, New York 17, N. Y.

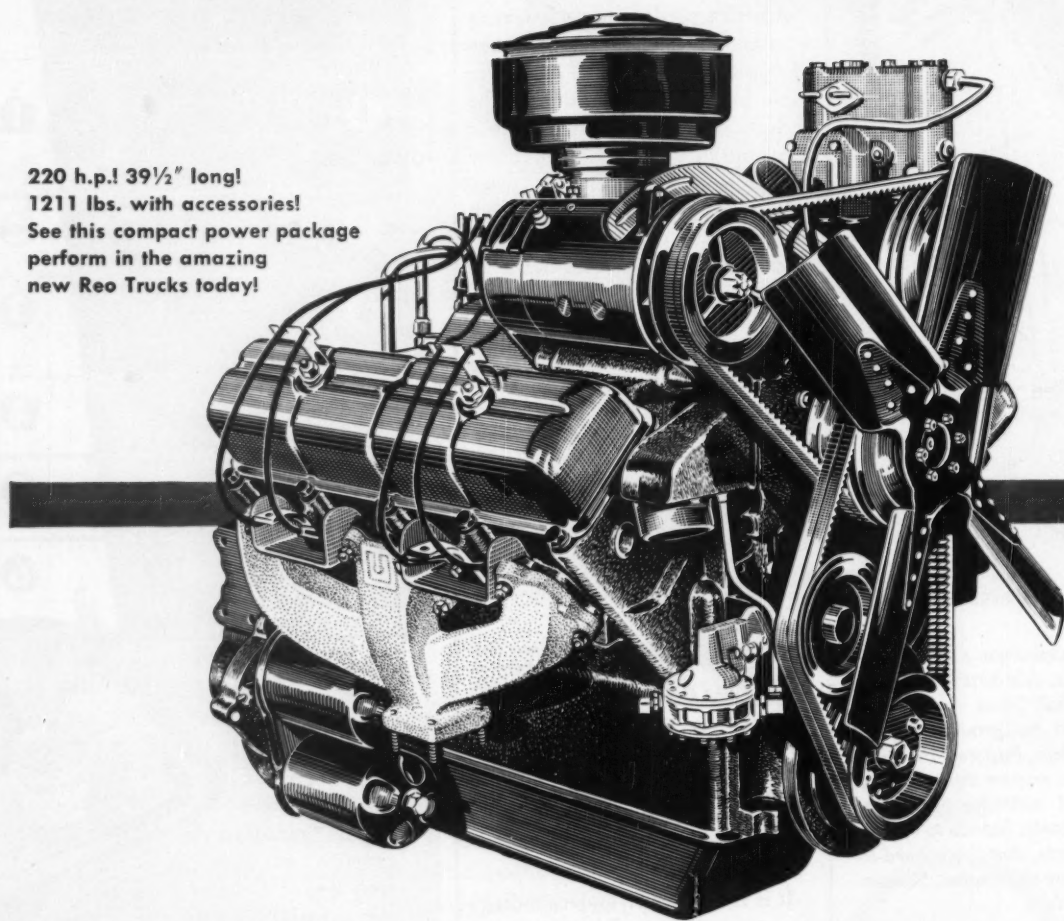
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# 100,000 MILE

## now on all REO

220 h.p.! 39½" long!  
1211 lbs. with accessories!  
See this compact power package  
perform in the amazing  
new Reo Trucks today!



# WATCH REO



# WARRANTY

## GOLD COMET ENGINES

When you buy Reo power, you buy *insured performance*. Insured up to 100,000 miles or one year by Reo's new iron-clad, factory-backed warranty.

Reo's 100,000 Mile Warranty covers Reo's complete power range of rugged Gold Comet Engines—from gasoline and LP-Gas 6's to Reo's new 220 h.p. Gold Comet V-8's, the most powerful V-8 truck engines ever built.

Warranty covers engine models—255 OA, 292 OA, 331 OA, OH 160, OV 195, OV 220, OH 160 LPG, 255 OA LPG, 331 OA LPG. Available through Reo Factory Branches, Distributors and Dealers nationwide. Buy Reo . . . replace with Reo . . . and be *doubly* sure of performance.

See your Reo representative today for complete information.

## REO MOTORS, INC.

SUBSIDIARY OF **BOHN** ALUMINUM AND BRASS CORPORATION

# ROLL



## Hoover Commission report shows Microfilm Alone Is Not Enough!

The recent Hoover Commission report to Congress shows that the use of microfilm for *space savings alone is not economically practical*. Where space savings are combined with a system of unitized microfilm for practical day to day usage, the Commission found microfilm to be a sound investment.

**FILMSORT**®

***first in the field of Unitized  
Microfilm, is the PLUS that  
makes microfilm practical***

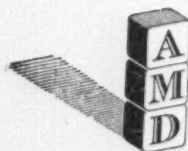
Filmsort combines the space savings of microfilm with the usability of a compact, accessible card file. Tailored to the individual need, there is a Filmsort application for every record problem.

**FILM IT**—Microfilm your records—our service department will do this for you. We'll take your records in their present form, film them on 35mm or 16mm microfilm, with a negative copy for security, positive copy for reference.

**FILE IT**—in Filmsort Aperture or Jacket cards, by frame or strip, depending upon the type of record. This too is part of our service, including mounting or filing of film in cards, and indexing. Filmsort may be combined with electric accounting machine, marginal punched or manual systems.

**FIND IT**—Filmsorted records are easy to find, combined with the filing system of your choice. Microfilmed documents are easy to use in Filmsort cards—Filmsort viewers instantly restore records to original size for easy reference.

Filmsort is the PLUS that makes microfilm practical. Don't use *half* a system. *Microfilm alone is not enough*. Filmsort unitized microfilm is *really economical, really practical*. Let us tell you how Filmsort can work for you.



**ASSOCIATED MICROFILM DEALERS, Inc.**  
79 Clinton Place • Jersey City, New Jersey

reverse, we can from coded data, properly processed, reproduce the results in printed and even now in spoken form.

Data handling machines, foreshadowed by the complicated electronic computers of today, will be adapted increasingly to a wide variety of business and industrial uses. They will assume many of the routine and repetitive functions of bookkeeping, inventory control, accounting, and inspection.

The application of electronic analyzing, data handling, and control mechanisms may be expected to reach far beyond clerical functions. These systems will develop to a point where they may analyze marketing and sales data, schedule production, order materials, control manufacturing processes, and schedule delivery of finished products. Already it is apparent that such systems can improve upon the performance of the human brain in repetitive thought processes, wherever data can be pre-analyzed and stored in an electric memory.

These future developments are ones that will be in service during the early portion of the next 75 years. Their roots are already apparent and their future growth can be expected with some certainty.

### *The opportunities of tomorrow*



**HARLOW H. CURTICE**

*President, General Motors, before Business Leaders' Luncheon, GM Motorama of 1955, New York.*

"... an ever more dynamic and prospering national economy."

Bold planning . . . provides the impetus that keeps our economy on the march forward toward ever new frontiers. The old frontiers of geography have disappeared, but their place has been taken by frontiers in science and industry whose horizons are limitless.

Given a world at peace, sound national policies, and a people willing to work for the things they want, we can look forward to an ever more dynamic and prospering national economy.

## *Do you have a PROFIT-PARING Plan?*



You may not realize how much time, effort and money are being wasted in your business because of dangerous and inefficient methods of handling payroll and disbursement checks.

It will pay you to investigate the Todd Disburser. It's three machines in one. It dates automatically. It shreds amount lines into check fibres with indelible ink. It controls and counts every signature.

Employees like the Todd Disburser because it's fast, simple, easy to operate. Executives like it because it saves employee time, cuts overhead and completely protects company funds.

Get all the facts about the time-saving, money-saving Todd Disburser by mailing the coupon. Take this first step toward a better balance sheet in 1955.

**Todd**  
COMPANY, INC.

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Please send full details on the Todd Pro-tectograph Disburser.

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Telephone \_\_\_\_\_

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DRM-4-55



ONE OF A SERIES

## You Get Many Benefits By Specifying **VICKERS** Hydraulics

### *Reduced Maintenance Costs*

Vickers Oil Hydraulic Equipment is built to minimize maintenance . . . has an outstanding performance record. Nevertheless, Vickers recognizes that sooner or later any piece of machinery requires overhaul. So we have developed a service department of exceptional efficiency . . . one that is convenient for you by reason of full time factory-trained service men working out of our offices from coast to coast.

Shown below are several of the practical aids provided to assure you quick and economical service on Vickers Hydraulics.

#### **VICKERS Incorporated**

DIVISION OF THE SPERRY CORPORATION

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Application Engineering Offices: • ATLANTA  
CHICAGO AREA (Brookfield) • CINCINNATI • CLEVELAND  
• DETROIT • HOUSTON • LOS ANGELES  
AREA (El Segundo) • MINNEAPOLIS • NEW YORK  
AREA (Summit, N. J.) • PHILADELPHIA AREA (Media)  
PITTSBURGH AREA (Mt. Lebanon) • ROCHESTER  
ROCKFORD • SAN FRANCISCO AREA (Berkeley)  
SEATTLE • ST. LOUIS • TULSA • WASHINGTON  
WORCESTER



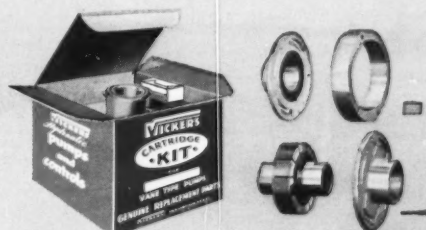
#### **SPARE PARTS RECOMMENDATIONS**

Our service men will study your situation and make practical recommendations on your spare parts inventory . . . will check your inventory and provide you with printed lists of parts usually required.



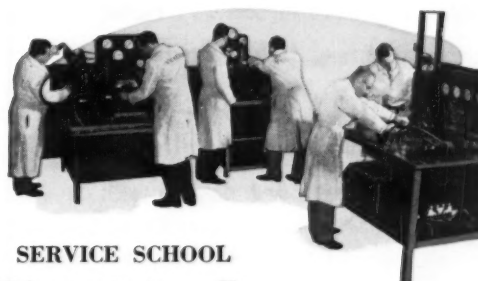
#### **PREVENTIVE MAINTENANCE**

Our service men will gladly set up for you an effective program of preventive maintenance on a timetable basis. This avoids costly down time and keeps maintenance costs at a minimum.



#### **SERVICE KITS**

Packaged repair kits for many Vickers products are available. These provide all needed parts for quick repair in the field and at minimum cost. In addition, these kits simplify stock problems by reducing the number of loose parts.



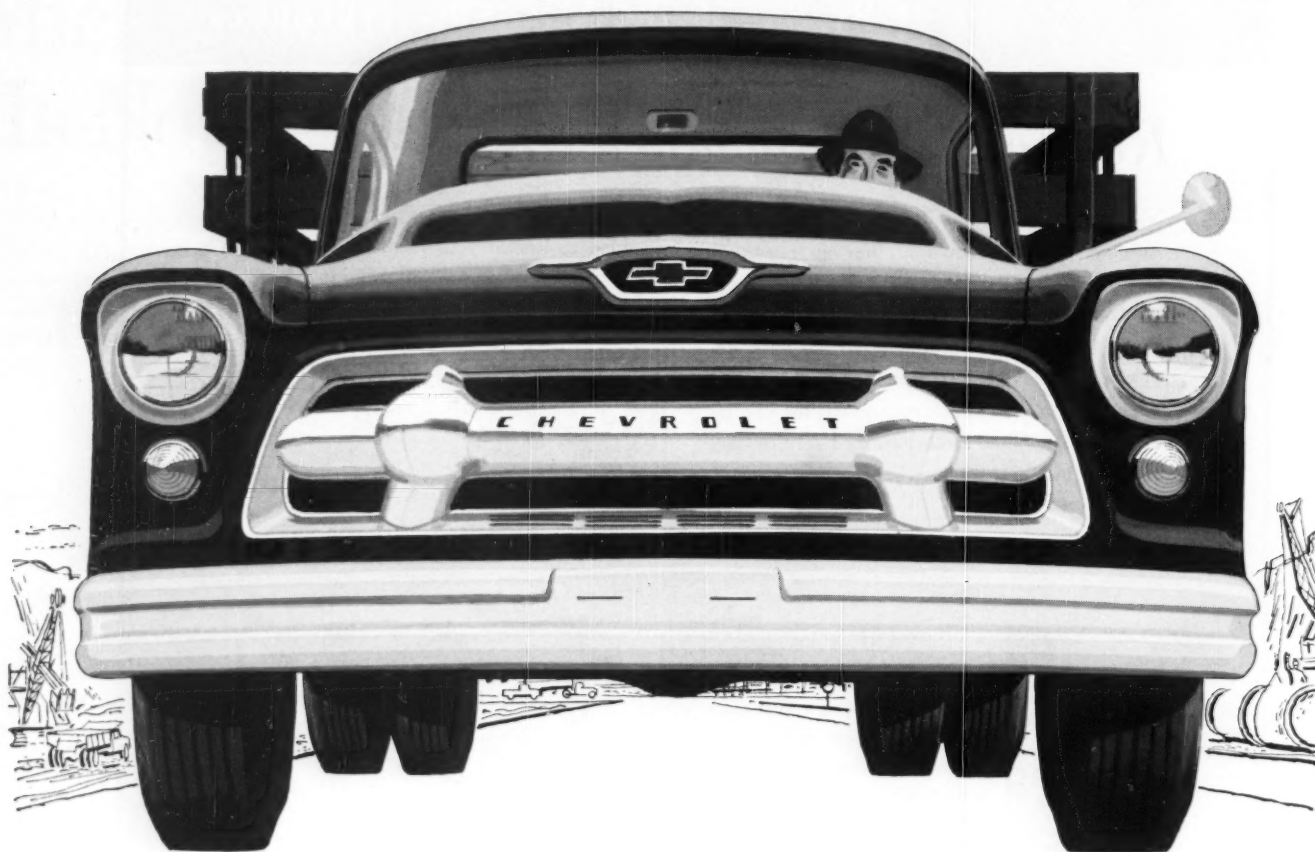
#### **SERVICE SCHOOL**

Vickers maintains a Hydraulics Training School for engineering, maintenance and service personnel of both original equipment manufacturers and their customers. For further information, please contact Product Service Department directly.

7143

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

**THEY'RE  
HERE! NEW CHEVROLET**



New models . . . more models . . . higher G.V.W. Designed and built the way you can count on Chevrolet, the leader, to build them. Ready to do more jobs. Do 'em faster. Do 'em better. And do 'em with new economy.

**Dressed for a new bonus**

For the first time in any truck line, *two* distinctly different styling treatments are offered by Chevrolet. One in light and medium models, another in heavy-duty. Each is a new, profitable advertisement-on-wheels for you and your business.

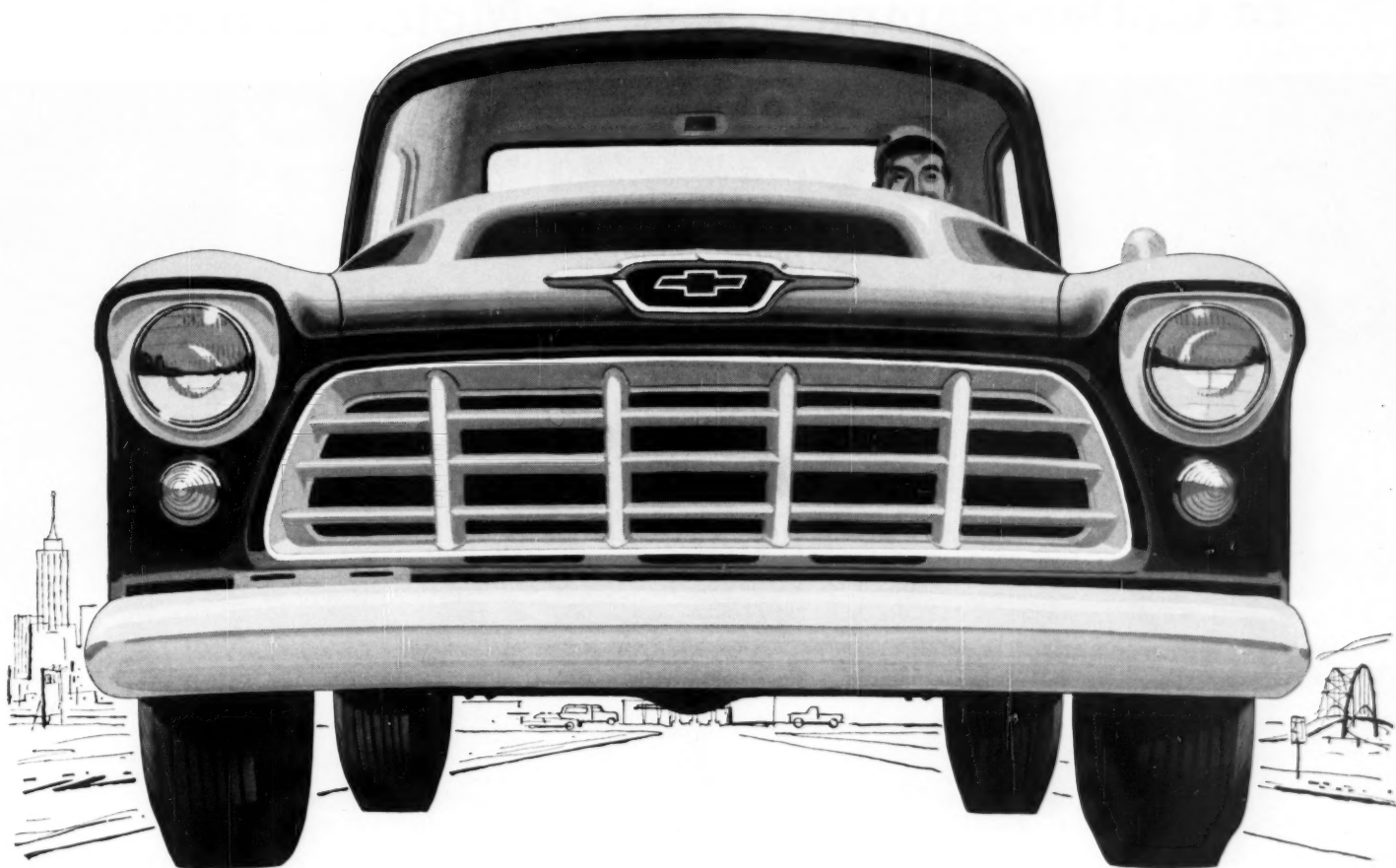
**Measured for a new savings**

Makes a whale of a difference to get a truck that fits the job. And in Chevrolet you get it! With 75 different models, all having the industry-standard 34-inch frame width . . . 15 wheelbases, ranging to 220 inches . . . three different chassis types, conventional, forward control, low cab forward . . . and with maximum G.V.W.'s upped to 18,000 lbs.—Chevrolet's new line of Task-Force Trucks offer the *exact*

**THEY'RE  
HERE! NEW CHEVROLET**



# *Task-Force* TRUCKS



truck to do the job you need done . . . with operating costs lower than ever!

There's new Overdrive for even bigger gas savings on  $\frac{1}{2}$ -ton models . . . proved truck Hydra-Matic on  $\frac{1}{2}$ -,  $\frac{3}{4}$ - and 1-ton models—each optional at extra cost. And now, as standard equipment, Power Brakes are featured on 2-ton models (optional on all others) and Tubeless Tires are standard on  $\frac{1}{2}$ -ton models.

#### **Powered for economy**

Whether you deliver door-to-door or haul state-to-state, Chevrolet's *six* new "high-voltage" engines offer the right power-combination for dependable, economical performance on every job. All are of efficient valve-in-head design with high compression ratios. All feature the surer kick-off and

bigger generator capacity that only Chevrolet's new 12-volt electrical system delivers.

Chevrolet's new "under-the-hood" features are almost endless. Engine mountings are completely redesigned, cooling and lubricating systems made more efficient, fuel system improved . . . on and on they go, setting a new pattern for the truck industry.

#### **Investigate without delay**


So revolutionary are the many new and profitable features advanced by Chevrolet's new Task-Force that truck users everywhere should see their Chevrolet dealer today. Learn the complete story and get started on your way to better trucking. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

# *Task-Force* TRUCKS



WHAT'S NEW IN MOTOR CONTROL? ★ ★ ★ GET IT FIRST IN CUTLER-HAMMER

## New Combination Starters in the Spectacular Line of Cutler-Hammer ★ ★ ★ Motor Control



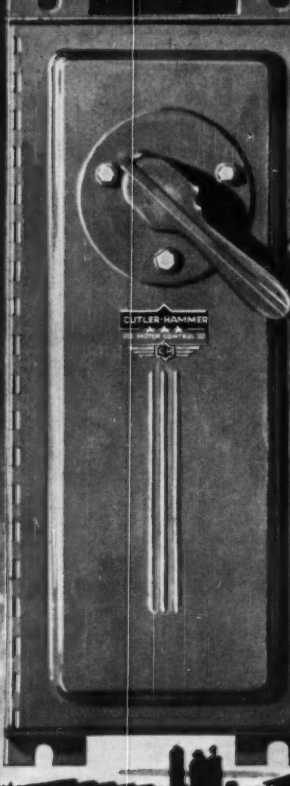
**C-H 9589  
COMBINATION STARTER**

Combines safety disconnect switch with motor starter in a single unit. NEMA 1 Enclosure is here illustrated.

★  
*installs easier*

★  
*works better*

★  
*lasts longer*



**C-H 9591  
COMBINATION STARTER**

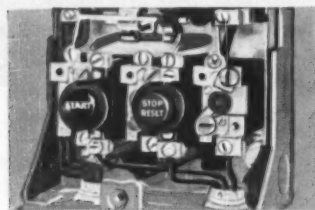
Combines a circuit breaker with the motor starter in one compact unit. NEMA 12 Enclosure is here illustrated.

Users have had many dramatic proofs of the advantages built into Cutler-Hammer ★ ★ ★ Motor Control. They *know* the three silver stars on the Cutler-Hammer nameplate identify control equipment that sets three entirely new standards of motor control performance and value. Star #1: Amazing savings in installation costs which often exceed the cost of the control. Star #2: Performance so uniform and dependable that *this* control often saves many times its cost by the production interruptions it avoids. Star #3: Life so greatly increased that this control

never requires maintenance expense in 90% of its uses.

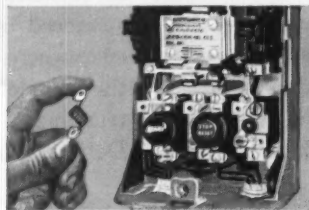
Now combination starters are available in this spectacular new line of Cutler-Hammer ★ ★ ★ Motor Control.

Your nearby Cutler-Hammer Authorized Distributor has been stocked and is ready to serve you. Bulletin 9589 Starters incorporate a rugged disconnect switch of advanced design with or without fuses. Bulletin 9591 Starters are equipped with circuit breakers. Order *now* for prompt delivery. CUTLER-HAMMER, Inc., 1436 St. Paul Avenue, Milwaukee 1, Wisconsin.



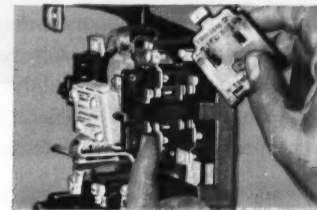
**Full Three-Phase Protection**

Only three overload relays can give complete three-phase protection to avoid motor burn-outs and their costly interruptions to production. And only Cutler-Hammer offers this complete three-phase protection in standard combination starters. You pay only for the third relay, nothing extra for special engineering or special enclosures.



**Adjustable Load Sensing Coils**

The accurate adjustment of overload protection permits motors to work harder without damage to motor windings. This is more important than ever with the newer type small frame motors. Adjustable load sensing coils in these new starters provide 3% loading accuracy instead of the 10% to 12% accuracy in competitive control.



**Superlife Vertical Contacts**

Experienced control users insist on dust-safe vertical contacts. And now the famous Cutler-Hammer vertical contacts have been doubly improved. First, their new lightweight design cuts bounce to reduce arcing. Second, any arcing that might occur is now pressure-quenched. Compare performance and see the difference.



- Output still rising
- Failures slip slightly
- New peak in retail trade
- Unemployment holds steady
- Spending plans of business and consumers point to new markets

### Flare for the Future

The prospects for business activity in the months ahead appear to be as bright as the glow from the nation's blast furnaces. Some observers wondered worriedly whether the glowing boomlet reflected only abnormal activity in two lines—automobiles and construction—which they thought were quickly exhausting the available markets.

However, an entire panorama of industries were sharing in the revival of demand. It was true that auto plants were taking a larger-than-usual share of steel output, about 25 per cent. However, mills were booked heavily with orders from producers of appliances, machine tools, farm equipment, wire, pipe, railroad equipment, and other items.

The momentum which became most noticeable in automobile demand and output last Fall has spread through many other related industries, thus setting up other waves of income and demand for many goods. Added support to the boomlet has come in recent months from defense orders, foreign markets, state and local spending for public works, and consumer demand, all of which were apparently above a year ago last month.

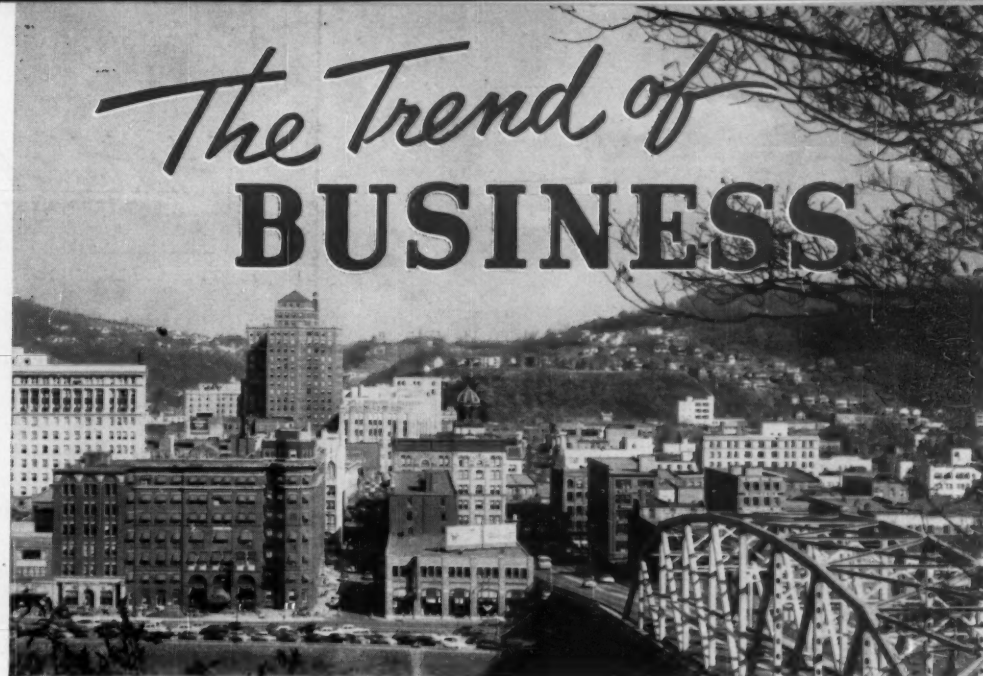
The possible exhaustion of consumer markets may be a vexation to some manufacturers, but an economy marked by more than one million new marriages each year and vast untapped markets (only 5 per cent of all homes have air conditioners) should certainly be a source of reassurance rather than apprehension.

### Bigger Markets Ahead

There is gladdening news for many manufacturers in the latest survey of consumer buying plans, made by the Survey Research Center of the University of Michigan for the Federal Reserve Board. These surveys, which are conducted among a few thousand representative consumers in the early months of each year, have proved effective in foreshadowing the shape of shopping since their inception in 1946.

The new survey indicates that more consumers than last year plan to buy homes, appliances, and furniture. However, buyers of new cars this year are not expected to outnumber those in 1954 when 5.5 million new cars were sold.

During March automobiles were rolling off assembly lines at the unprecedented rate of nine million cars per year. All previous records toppled when a total of 174,904 cars was produced during the third week of the month. The



WILLIAMS PHOTOGRAPH—CHARLESTON, W. VA.

March total was about 6 per cent higher than the previous record attained in June 1950, just prior to the Korean clash.

This startling rate of production can probably continue for the remainder of the second quarter, which is traditionally the most favorable selling season for new cars. However, after July 4, when the Spring season and strike threats are both out of the way, output will probably settle on a much lower level. Whether the descent will drag many other industries to depressed levels is certainly problematical.

The rise in industrial output which began last Summer continued through February and March as manufacturers in most lines strove to meet the surging demand. Total output in March was probably about one point below the all-time high of 138 (1947-1949=100) reached

in March 1953, before defense cutbacks and inventory reduction slowed activity in many lines.

Last month the steel industry, operating at about 92 per cent of capacity, poured the highest tonnage since June 1953. However, weekly steel production is still about 4 per cent short of the all-time peak reached two years ago. Many observers anticipate a rate of 95 per cent of capacity before steel output begins to level off. Even the most optimistic steelmakers were pleasantly surprised by the extent of the recovery in steel. About 15 per cent of total capacity is stand-by facilities for emergency needs.

Many steel consumers have attempted to rebuild their inventories in recent months. However, the inventories of durable-goods manufacturers were down 8 per cent from a year before in early February, indicating perhaps that steel demand will stay firm for months to come.

Spot surveys of manufacturers in 140 cities in 46 states reflected a further gain in new orders received during February. However, the backlog of unfilled orders probably held close to \$48.3 billion, the level at the beginning of the month, since output has been outrunning new orders in most lines. There was scant indication last month of a slackening in new orders, which were generally above a year ago.

The latest survey by the SEC and Department of Commerce indicates that business has been boosting its spending plans for new plants and equipment. Such expenditures are expected to reach \$27 billion this year, a rise of 1 per cent over 1954, but still a bit short of the record \$28.5 billion in 1953.

Noticeable gains over last year are expected in the spending by commercial companies—finance, service, trade, utilities—while manufacturers are slated to spend about 3 per cent less. Since their start in 1945, these surveys of intended expenditures for plants and equipment have generally understated the actual spending.

Both factory payrolls and unemployment continued to improve slightly in March according to preliminary information from many parts of

### Weekly Business Signposts

SELECTED BUSINESS INDICATORS	LATEST WEEK*	PREVIOUS YEAR WEEK	YEAR AGO
Steel Ingot Production Ten Thousand Tons	224	227	162
Bituminous Coal Mined Hundred Thousand Tons	80	83	69
Automobile Production Thousand Cars and Trucks	197	193	145
Electric Power Output Ten Million KW Hours	981	973	857
Freight Carloadings Thousand Cars	656	667	610
Department Store Sales Index Number (1947-1949=100)	102	98	92
Wholesale Prices Index Number (1947-1949=100)	110	110	111
Bank Clearings Hundred Million Dollars	988	925	926
Money in Circulation Hundred Million Dollars	298	298	298
Business Failures Number of Failures	226	257	243

\*Steel data are for the fourth week of March; all others are for the third week except sales which are for the second.

Sources: Amer. Iron & Steel Inst.; Bureau of Mines; Automotive News; Edison Elec. Inst.; Assn. of Amer. Railroads; Bureau of Labor Statistics; DUN & BRADSTREET, INC.

# NEW COMPTOGRAPH "202"



brought to you  
by the makers of the  
world-famous Comptometer  
adding-calculating machine

The handsome 10-key  
calculating-adding machine  
quiet • high-speed  
electric  
attractively priced

## figures faster than you think

The new portable Comptograph adds, subtracts, multiplies and even divides. The fastest, quietest, easiest 10-key machine to operate! New, human-engineered keyboard designed to reduce to a minimum lateral arm and hand movements. Exclusive single-cycle action eliminates "runaway" tape.

The exclusive Visi-Balance window shows automatically the true running debit or credit balance at all times. You get instantaneous subtotals or totals with automatic space-up. Direct action segment printing in two colors. Erase tab-backspacer. AC-DC motor. Get a free office trial of this years-ahead machine that figures faster than you think. Just fill out and mail the coupon.

### FELT & TARRANT MANUFACTURING COMPANY

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- Gentlemen: Without cost or obligation—
- ☐ I want more information about the new COMPTOGRAPH "202"
- ☐ Please arrange for a free office trial
- Name \_\_\_\_\_
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The new COMPTOGRAPH  
CALCULATING-ADDING  
MACHINE, the COMPTOMETER®  
DICTATION MACHINE, and the  
COMPTOMETER® ADDING-  
CALCULATING MACHINE  
are products of Felt & Tarrant  
Mfg. Co., Chicago 22, Ill.  
Offices in principal cities and  
throughout the world.



## The Trend of BUSINESS

the nation. Factory payrolls, which had been cut considerably by the inventory recession last year, have been growing again in recent months. However, they now list about 1.5 million fewer workers than at the time of the post-war peak of 17.5 million in August 1953. While manufacturing employment last month was off 8 per cent from this peak, factory output is up slightly from August 1953, reflecting the sizable gains in productivity during the past two years. Employment in non-farm establishments (business and government) was off only 79,000 from a year ago in February. The year-to-year decline of 420,000 in manufacturing, mining, transportation, and utilities was largely balanced by expanding payrolls in trade, services, and government.

Early reports pointed to a very slight dip in unemployment to 3.2 million in March, the second consecutive month in which joblessness was below the year-ago level. This highly sensitive gage reflects the

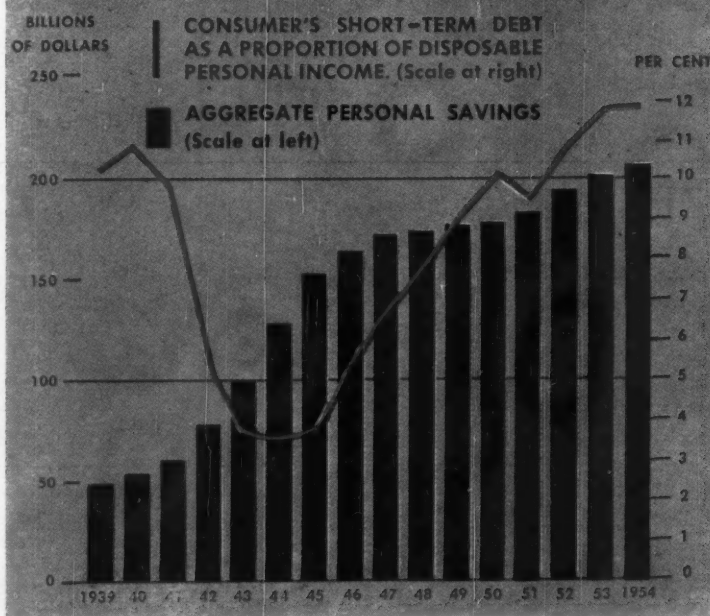
ability of the economy to provide new jobs for our growing population while absorbing workers temporarily displaced by automation or other industrial shifts.

However, there continued to be a hard core of long-term unemployment (out of work for fifteen weeks or more) which amounted to 1.1 million in February. This was about the same as in recent months but down considerably from the level of 1.5 million a year ago. Communities which depend heavily on such faltering industries as coal, textiles, or shipbuilding contained much of the long-term jobless.

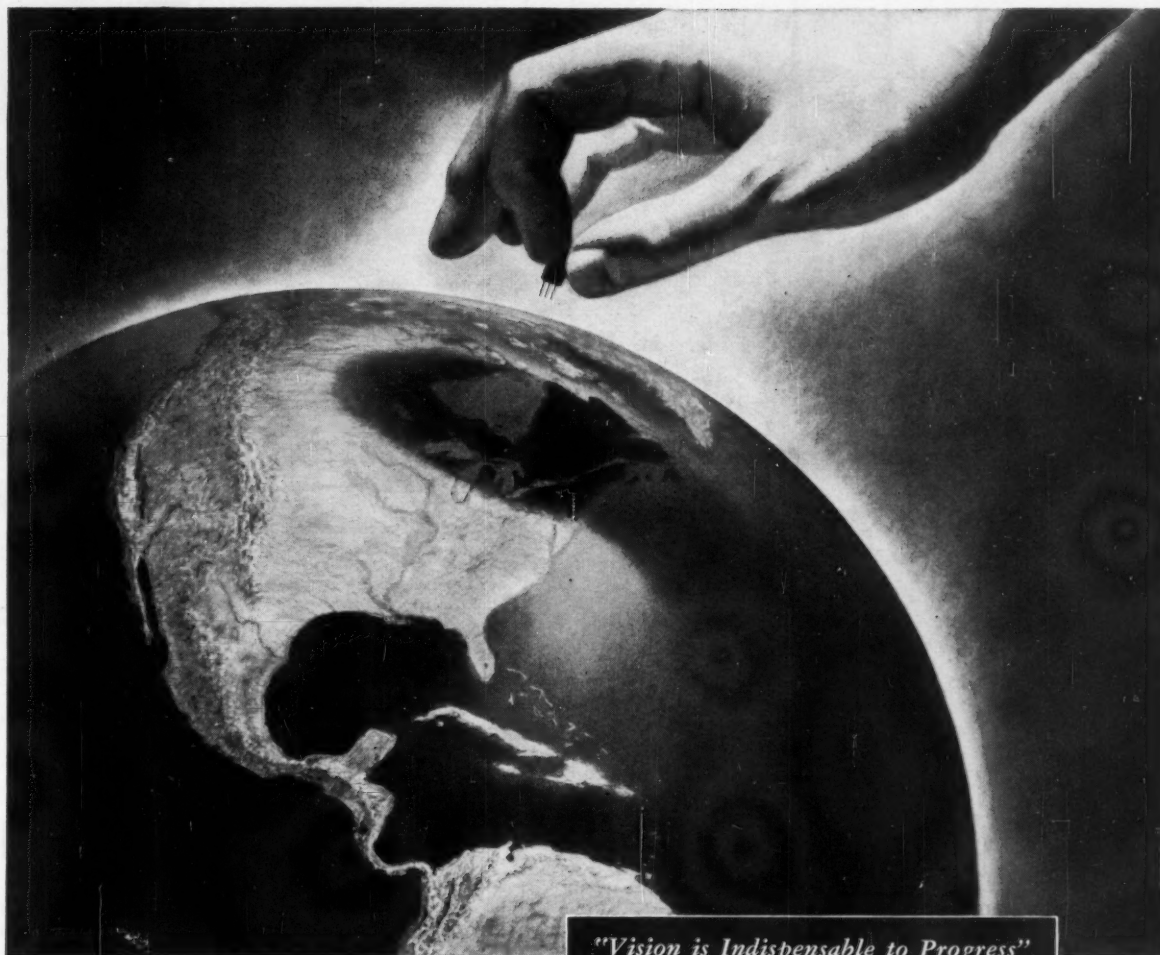
The average weekly wages of factory production workers rose nearly \$1 in February to reach an all-time high of \$74.93 as a result of longer hours and a very slight rise in wage rates. Upward pressure on wage rates in general is expected in the months to come, following the concerted drive of the auto workers for the guaranteed annual wage.

Consumers' short-term debts rose both absolutely and as a proportion of their spendable incomes in 1954. More than half of all non-farm spending units had short- and long-term debts amounting to 20 per cent or more of their disposable incomes. Mortgage debt on non-farm dwellings amounted to roughly \$60 billion in 1954. Consumer credit outstanding in early February 1955 was close to \$30 billion, an all-time high, of which one-third was for cars.

### PERSONAL SAVINGS AND DEBT







*"Vision is Indispensable to Progress"*

## How a speck of crystal is changing your life—your world

Advances so startling that only ten years ago they might have been subjects for science fiction are being chalked up by electronics—the fast-growing industry that harnesses electrons with vacuum tubes and their equivalents. More and more, as human impulses prove too slow to control the latest tools of science and industry, miniature tubes and semiconductor devices, such as 1/10 oz. transistors are taking over.

Today new radars keep tabs on storms and hurricanes, bring in ships and planes. Promised for the future is an electronic unit to lead the blind. Other devices now perform elaborate record-keeping tasks for business.

As the electronic microscope and betatron point to victory over dread diseases, another electronic instrument makes blood counts in seconds. Equipped with tiny transistors, midget radios run for years. New solar batteries take their power from the sun. TV programs recorded on magnetic tape, light amplifiers, electronic air conditioning and other appliances are in various stages of development.

Some of the most impressive work of electronics shows up in industrial

controls—"black boxes" packed with electronic magic—which direct rivers of steel, guide precision drilling, measure metal thickness and detect flaws.

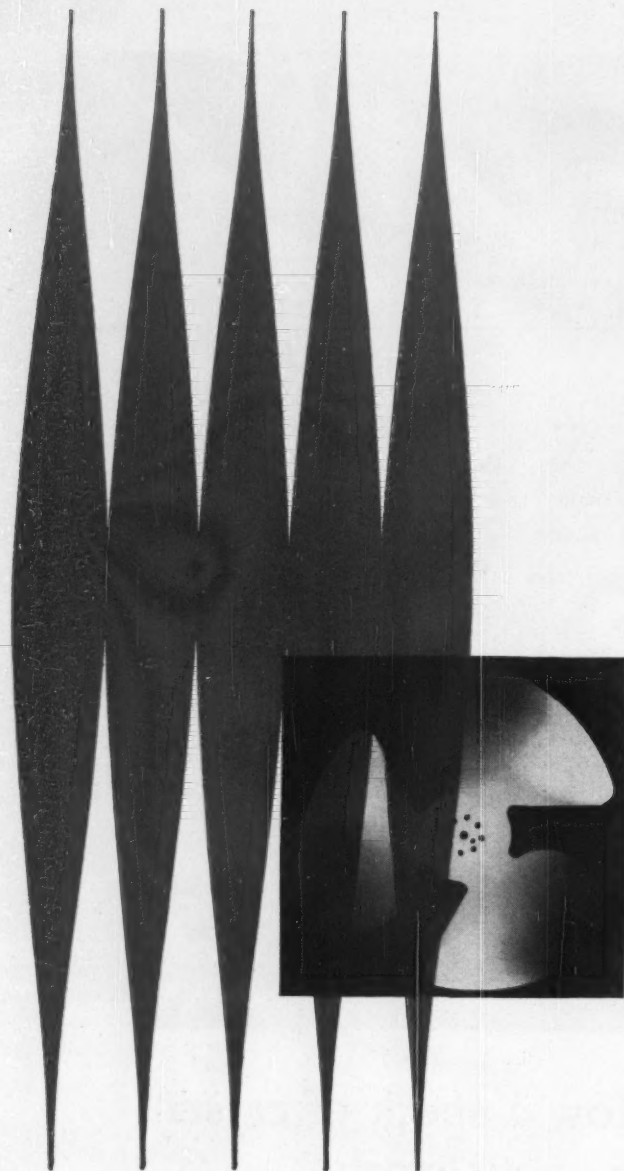
Guided by self-reliant enterprise, the electronics industry has already found ways to lighten man's tasks and lengthen his leisure, to entertain, defend and heal him. Only in a free competitive system can progress take such giant strides, achieving so much good for so many to share.

### **BANKERS TRUST COMPANY**

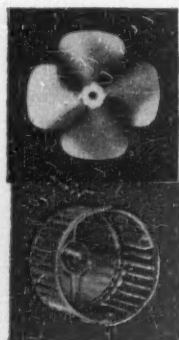
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The older and more experienced a manufacturer becomes, the more he appreciates that success is not solely a matter of producing a fine product at a fair price. Rather it is the sum total of all the services, great and small, which he renders to his customers day by day and throughout the years.



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TORRINGTON, CONNECTICUT  
VAN NUYS, CALIFORNIA · OAKVILLE, ONTARIO

## The Trend of BUSINESS

Early information indicated that personal income reached a new record level for the month in February, mildly above the \$290.7 billion (annual rate) of the prior month. The year-to-year gains continued to be sharper in wages and salaries than in other kinds of income, indicating that the markets for consumer goods are steadily growing. The income of business proprietors, farmers, and *rentiers* has been below a year earlier in recent months.

### Spending at Record

More money was spent in retail stores in March this year than in any March on record, according to spot surveys by DUN & BRADSTREET reporters in 66 cities in 39 states. The new record of \$14.4 billion, which topped the year-ago level by 7 per cent, was reached with the help of attractive promotions and an earlier Easter.

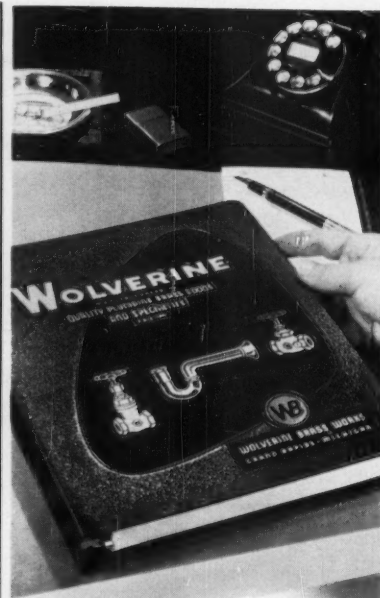
The year-to-year decline in apparel sales in February was counterbalanced by sizable gains in March. During February the strongest impetus to total retail trade came from the sales of new automobiles. Auto dealers in most parts reported that consumer demand was about on a par with the stunning rate of output. However, scattered reports of dealer difficulties began to appear in March. New car dealers in New Haven, Conn., encountered weakening demand.

### Slowdown in Building?

The worst building slump in ten years has hit the building trades in the Buffalo area, according to a survey of local unions. Cost con-

THE FAILURE RECORD				
	Feb. 1955	Jan. 1955	Feb. 1954	P.C. Chg.
DUN'S FAILURE INDEX*				
Unadjusted.....	45.6	42.9	47.9	-5
Adjusted, seasonally	38.6	40.9	40.9	-6
NUMBER OF FAILURES	877	939	926	-5
NUMBER BY SIZE OF DEBT				
Under \$5,000.....	108	133	119	-9
\$5,000-\$25,000....	453	484	458	-1
\$25,000-\$100,000..	242	256	271	-11
\$100,000 and over..	74	66	78	-5
NUMBER BY INDUSTRY GROUPS				
Manufacturing.....	188	195	207	-9
Wholesale Trade....	104	114	87	-20
Retail Trade.....	412	456	449	-8
Construction.....	113	87	109	-4
Commercial Service	60	87	74	-19
(LIABILITIES in thousands)				
CURRENT.....	\$42,056	\$37,872	\$47,774	-12
TOTAL.....	42,194	39,000	47,909	-12

\*Apparent annual failures per 10,000 listed enterprises, formerly called DUN'S INSOLVENCY INDEX.  
†Per cent change, February 1955 from February 1954.



## Your Catalog Becomes a Powerful Selling Tool in HEINN Loose-Leaf Binders

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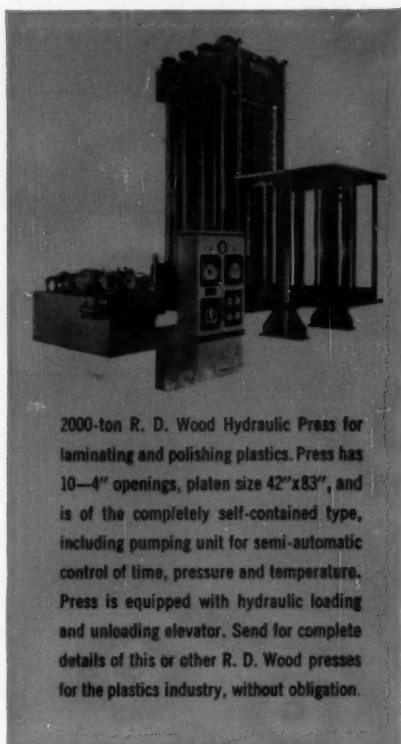
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## *The most productive plants use R. D. Wood presses*

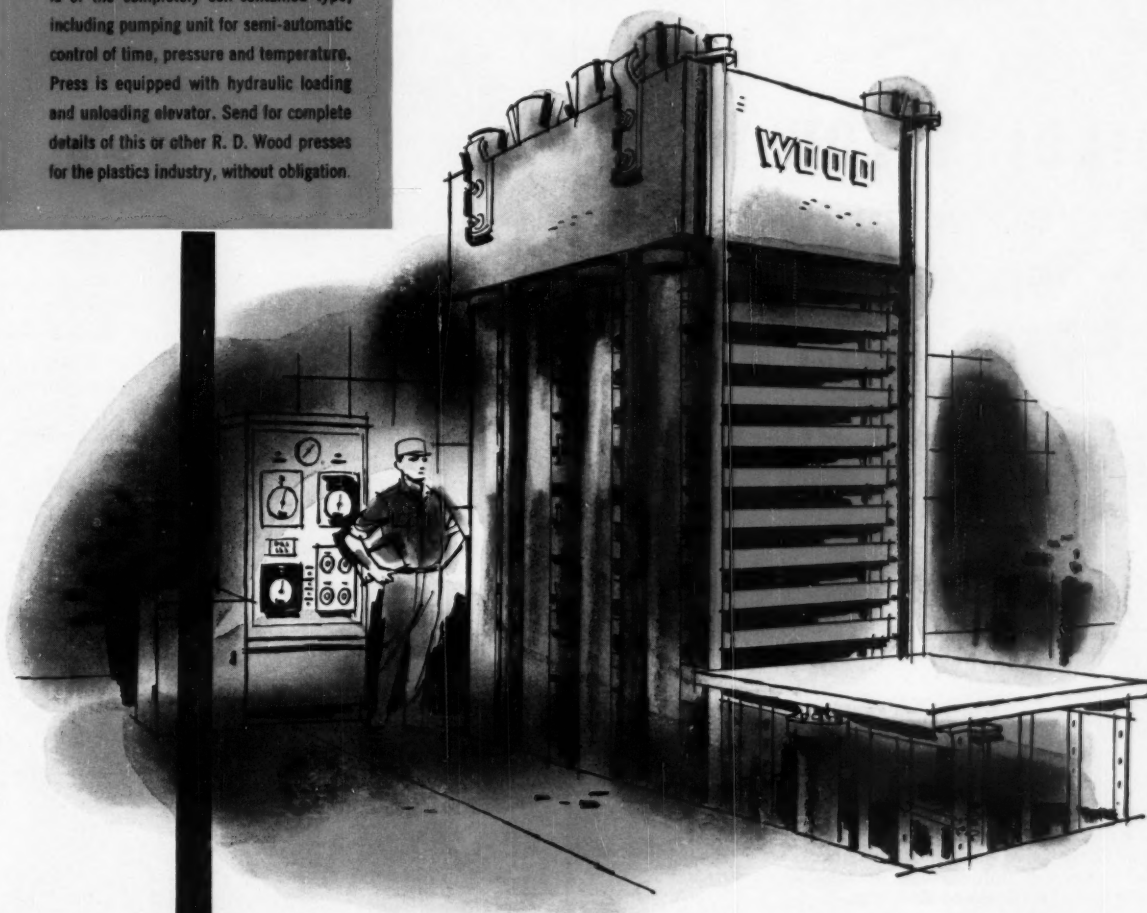
For proof, look at production records—and downtime for maintenance. Then watch an R. D. Wood press at work.

See for yourself the smooth, precise operation—

the dependable performance—even under tough conditions. Finally, inspect an R. D. Wood press

*up close.* Notice the soundness of design, the excellence of materials, the scrupulous care given to each detail

of construction. These are the reasons why R. D. Wood presses have been the standard of excellence for more than 150 years.



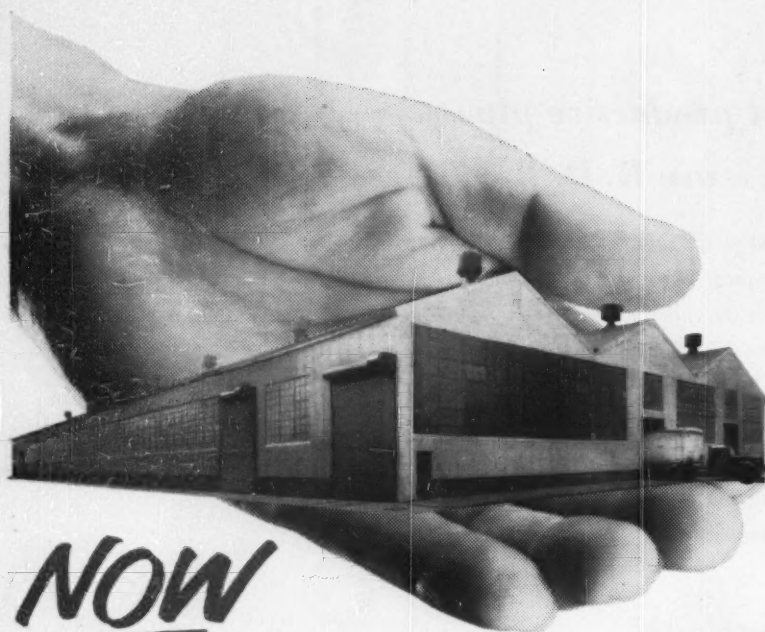
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## *The Trend of* **BUSINESS**

sciousness has led to waiting for clement weather before many contracted projects are begun.

Should there be a weakening in residential building in the latter part of the year as some observers hold, the gargantuan backlogs of needed construction for highways, schools, and other public facilities are likely to cushion the decline.

Several months of peak construction are signaled by the towering totals of new contract awards and building permits which run months ahead of actual work. The most remarkable year-to-year gains continued to be in residential construction. While the construction of commercial buildings, hospitals, and other public buildings is scheduled above 1954, new manufacturing plants should be down.

Building permits in February, as reported by DUN & BRADSTREET, Inc., were 26 per cent above last year. The New England States were up 113 per cent while the Middle Atlantic total was down 4 per cent from 1954. Non-farm housing starts were at a new peak in February and were at an annual

rate of 1.4 million, but the month-to-month rise was less than expected.

### **Failures Fall**

Business failures in February fell to the lowest level since last October. For the first time in 22 months, failures were below the year-ago level. Food store failures were at the lowest level in more than a year and failures of stores selling automobiles and supplies were at a two-year low.

All nine regions reported decreases in failures except the East North Central and Mountain States; in the latter area failures climbed to a post-war peak. There was a notable rise in failures in Milwaukee, Seattle, and Denver. Failures in New England and the West North Central States were the smallest in eight months. Only the Mountain and East North Central States had more failures than a year ago. The sharpest decline took place in the South Atlantic States—in Maryland, Virginia, and North Carolina.

### **Industrial Production**

Unadjusted Index: 1947-1948 = 100; Federal Reserve Board

	1952	1953	1954	1955
January	119	132	124	130
February	123	138	126	135
March	125	138	126	137
April	120	136	124	
May	118	136	124	
June	114	136	124	
July	108	129	118	
August	123	136	123	
September	131	135	125	
October	134	136	130	
November	134	130	130	
December	131	124	128	

### **Consumer Price Index**

Index: 1947-1948 = 100; U. S. Bureau of Labor Statistics

	1952	1953	1954	1955
January	113.1	113.9	115.2	114.3
February	112.4	113.4	115.0	114.1
March	112.4	113.6	114.8	114.1
April	112.9	113.7	114.6	
May	112.0	114.0	115.0	
June	113.0	114.5	115.1	
July	114.1	114.7	115.2	
August	114.3	115.0	115.0	
September	114.1	115.2	114.7	
October	114.2	115.4	114.5	
November	114.3	115.0	114.6	
December	114.1	114.9	114.3	

### **Wholesale Commodity Prices**

Index: 1947-1948 = 100; U. S. Bureau of Labor Statistics

	1952	1953	1954	1955
January	113.0	109.9	110.9	110.1
February	112.5	109.6	110.5	110.4
March	112.3	110.0	110.5	110.1
April	111.8	109.4	111.0	
May	111.6	109.8	110.9	
June	111.2	109.5	110.0	
July	111.8	109.9	110.2	
August	112.2	110.6	110.5	
September	111.8	111.0	110.0	
October	111.1	110.2	109.7	
November	110.7	109.8	110.0	
December	109.6	110.1	109.5	

### **Unemployment**

Thousands of Persons; U. S. Bureau of the Census

	1952	1953	1954	1955
January	2054	1892	3087	3347
February	2086	1788	3670	3383
March	1804	1674	3724	3250
April	1612	1582	3465	
May	1602	1306	3388	
June	1818	1562	3347	
July	1942	1548	3347	
August	1804	1240	3245	
September	1804	1240	3100	
October	1284	1301	2741	
November	1418	1699	2893	
December	1412	2313	2838	

### **Industrial Stock Prices**

Monthly Average of Daily Index: Dow-Jones

	1952	1953	1954	1955
January	271.71	288.47	286.64	397.91
February	265.19	283.94	292.15	410.25
March	264.48	288.79	299.15	400.00
April	262.55	275.28	310.91	
May	261.61	276.84	322.85	
June	269.39	266.87	327.91	
July	270.64	270.28	347.26	
August	276.70	272.26	346.06	
September	272.40	261.80	352.70	
October	277.77	270.73	358.29	
November	276.37	277.09	375.70	
December	285.95	281.15	393.39	

Based on closing prices of 30 industrial stocks.

### **Retail Sales**

Billions of Dollars; U. S. Department of Commerce

	1952	1953	1954	1955
January	11.8	13.1	12.3	13.3
February	11.7	12.3	12.1	12.8
March	12.7	14.0	13.5	14.4
April	13.4	14.2	14.3	
May	14.4	14.7	14.2	
June	13.8	14.6	14.7	
July	13.4	14.4	14.4	
August	13.6	14.2	14.1	
September	14.8	15.0	14.7	
October	14.0	14.0	14.5	
November	16.9	16.4	17.9	
December				

\* Approximation; figure from quoted source not available.



SPOTLIGHT

ON SUPERIORITY



*by Baccarat of France  
for the Coronation of Napoleon I, 1804\**



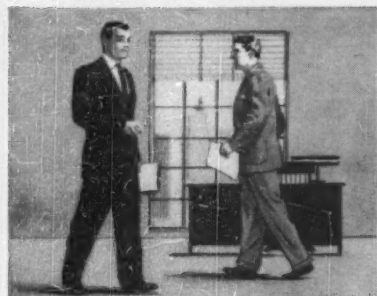
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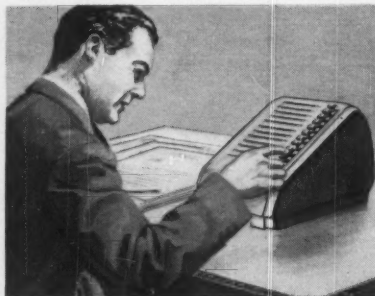
RISING PAPER COMPANY...IN THE BERKSHIRES, HOUSATONIC, MASS.

*\*Brandy Snifter, Courtesy of Baccarat & Porthault, Inc., New York City*

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## LETTERS to the Editor

### CAPTION CORRECTION

Dear Sir:

Please allow us to offer our congratulations on your excellent presentation of "The Trend of Business" in your February 1955 issue. It is ably written and attractively presented.

Naturally, we were interested in your economic analysis of the coal industry as it fits into the general picture, and found a direct reference to it in the caption at the bottom of the left column on page 29. In that connection, we hasten to suggest that the last phrase of that caption is incorrect.

Actually, bituminous coal and lignite output in 1954 was lowest since 1938—not 1881. As a matter of fact, annual output in each year of the period 1931-1935, inclusive, was below that in 1954; average output for that five-year period was 10.3 per cent below the estimated 392-million-ton output in 1954.

To be factual, coal output this past year declined to a low point

that probably never will be reached again during the next couple of decades. . . . The industry feels that it is now entering a period of gradually increasing annual output, which may reach a figure of nearly a billion tons by 1975. . . .

George C. Lindsay  
Editor  
Mechanization  
Washington, D. C.

*We defer to Editor Lindsay's facts about bituminous; ours really applied to "anthracite."*—Ed.

### UP TO SNUFF

Dear Sir:

I have been an enthusiastic reader of "The Trend of Business" for some years now. While you give considerable attention to business conditions in most of the major durable goods industries, I have yet to see any reference to developments in the snuff industry.

Someone told me that snuff sales last year increased, contrary to the

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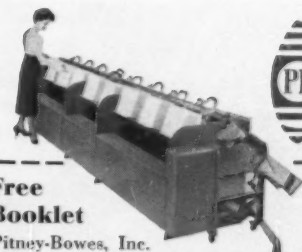
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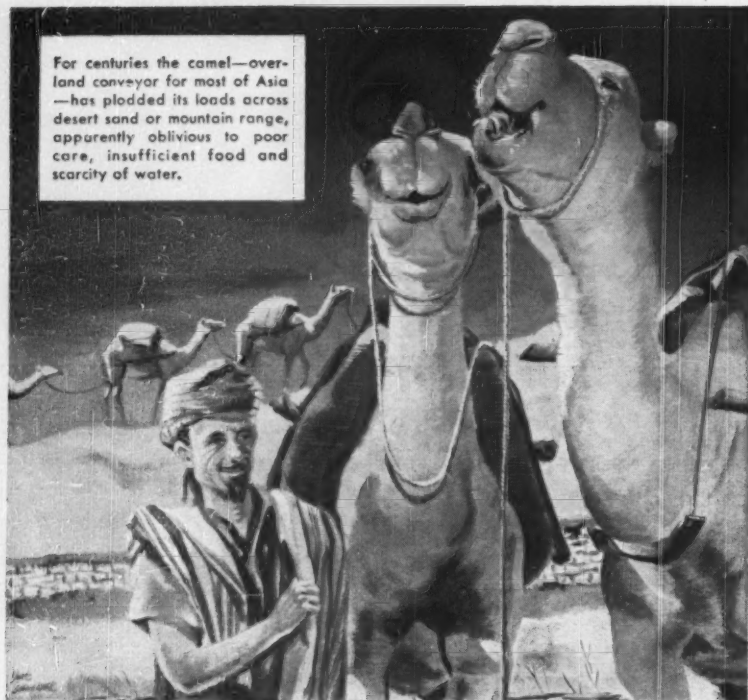
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For centuries the camel—overland conveyor for most of Asia—has plodded its loads across desert sand or mountain range, apparently oblivious to poor care, insufficient food and scarcity of water.



## MASTERS OF TOUGH CARRYING JOBS

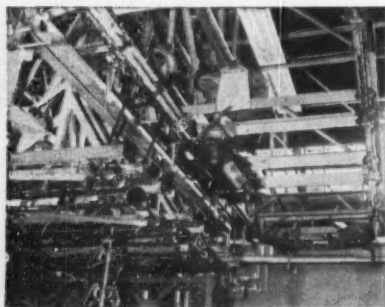
It is a far cry from this ancient camel-back conveyance to the ingenious Automation Equipment conceived and built especially for modern industry.

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ALLIED STEEL and CONVEYORS, INC.  
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general trend in the tobacco industry as a whole. Can you verify this? Has there been any connection discovered between lung cancer and snuff? Any facts or figures you could provide would be very much appreciated.

I think your magazine is definitely up to snuff.

David Leslie  
Scarsdale, N. Y.

The annual report of one of the country's leading snuff manufacturers, in existence for almost 200 years, stated that sales in 1954 rose slightly to the third highest level in the company's history. That this might be indicative of conditions in the snuff industry as a whole is suggested by a government estimate that total snuff production in 1954 was slightly higher than in the preceding two years. There were 35,115,000 pounds of snuff produced in 1947, according to the Census of Manufactures, or 7 per cent less than in 1939. The value of the 1947 product, however, at \$35,644,000 was 27 per cent greater than in 1939; this figure includes excise taxes. The Bureau of Labor Statistics' index of

snuff prices has been unchanged at 32 per cent above the 1947-1949 level for almost three years.

Snuff users are still numerous, apparently, although probably fewer than in grandma's day. We are inspired to refer to grandma, rather than grandpa, by the picture of the Gay Nineties belle on the can of "Society Sweet Scotch Snuff."

So far as we know, there have been no studies of the incidence of disease among snuff users. Lung cancer seems an unlikely malady, since the discriminating snuff user, we are told, places a wad under the tongue.—Ed.

## HEALTHY INTEREST

Dear Sir:

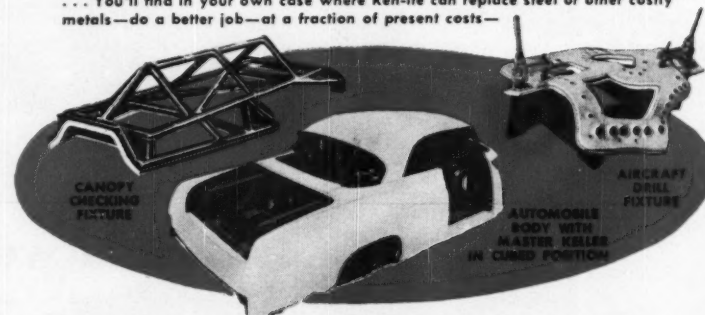
Your article, "Smaller Plants Share the Health" in the February issue of *DUN'S REVIEW AND MODERN INDUSTRY* is excellent.

In my Medical Examination Center, which includes a First Aid Department and Mobile X-Ray and Examination Unit, I soon learned that the vitally important placement examinations cannot be completely divorced from the responsibility of supervision, at least, of occupational

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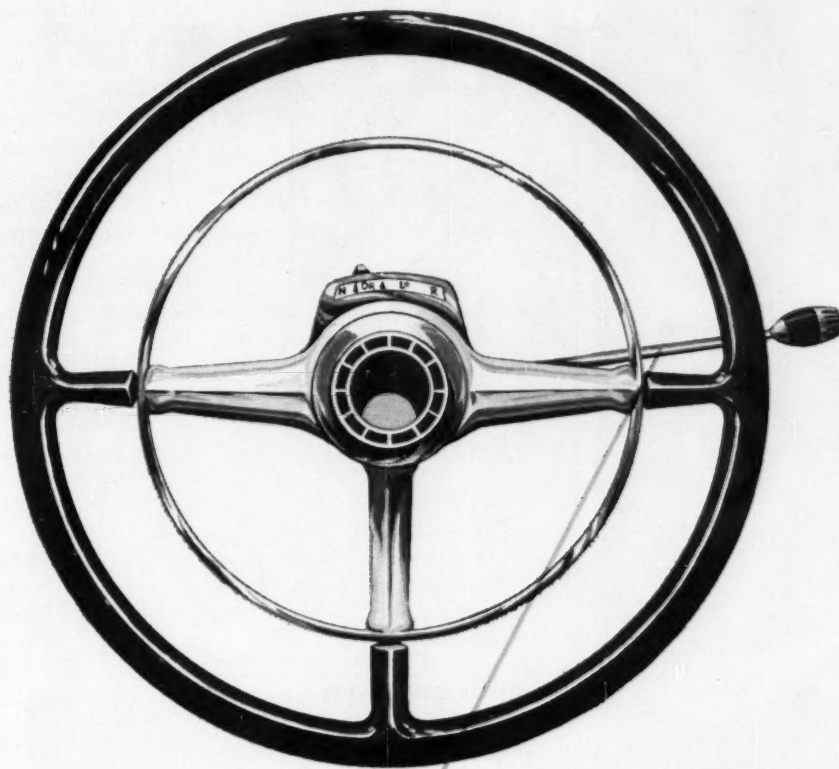
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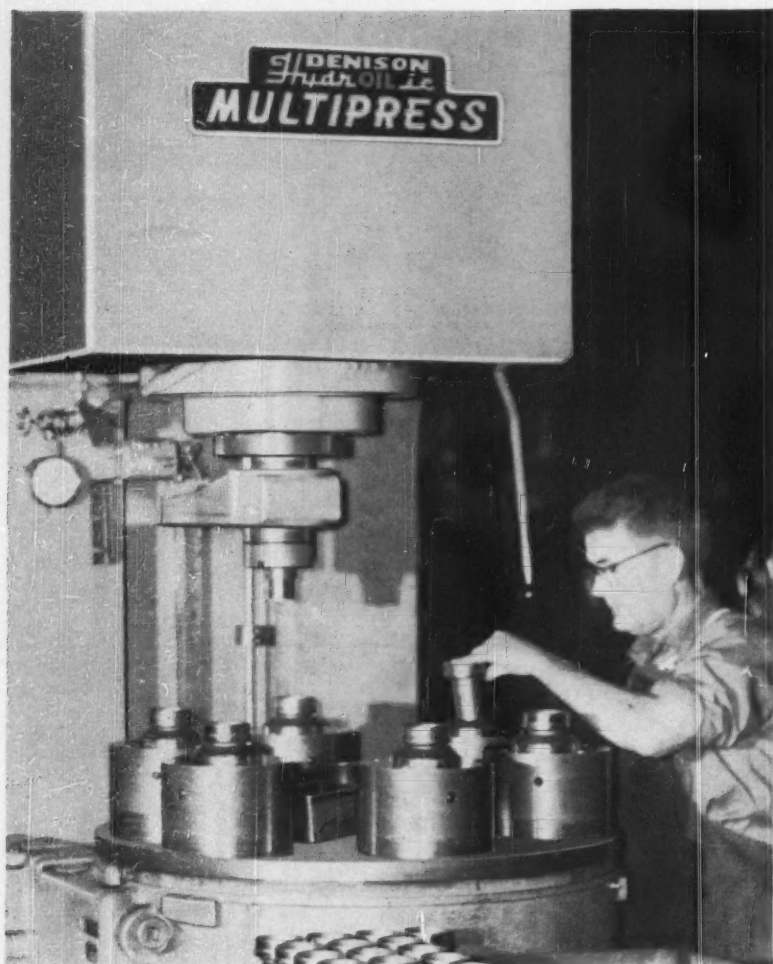
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154



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**I**NTERCHANGEABLE tooling and an accurate, fast-acting Denison Index Table make it possible.

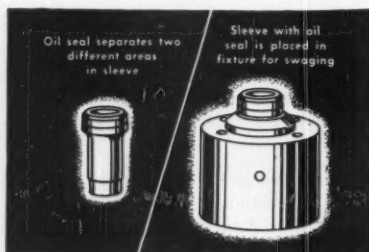
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New York, N. Y.

you in view of your May 1954 article on record-breakers.

It was our first, for one thing. Though we've turned out bigger and more intricate industrial cars, this car probably received more care per pound than any of the others, for its weight has to be accurate to the pound. Even the amount of oil used in lubricating is an important factor in holding to the weight limit.

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Supervisor, Shipping

Johnstown Works

U.S. Steel

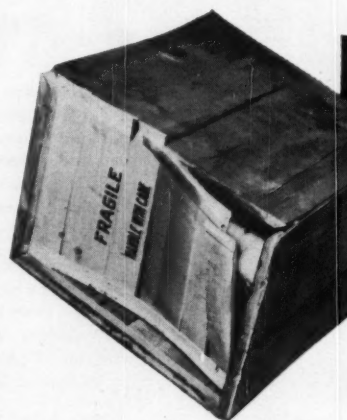
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#### RECORD BREAKER

Dear Sir:

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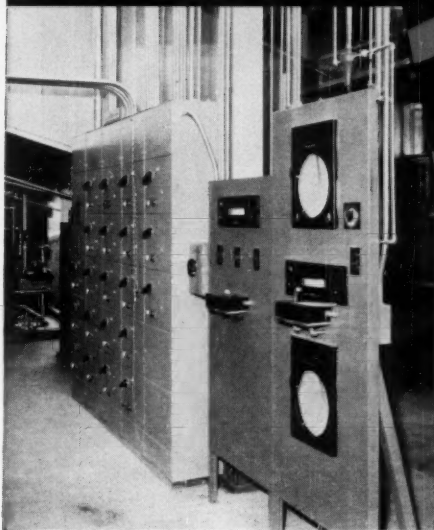
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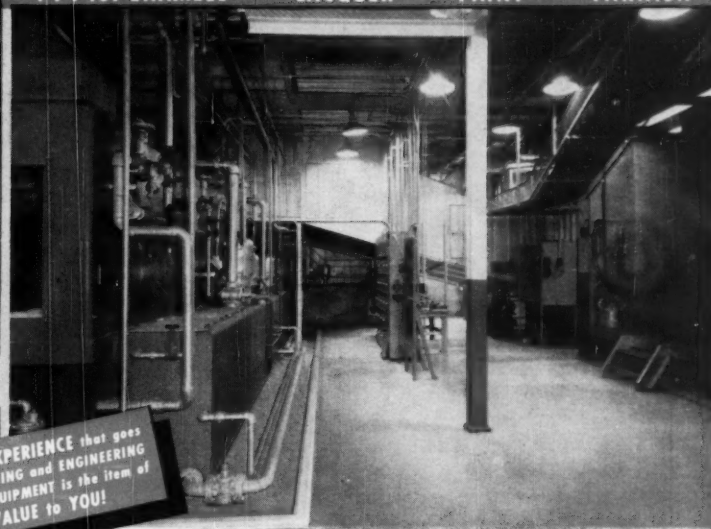


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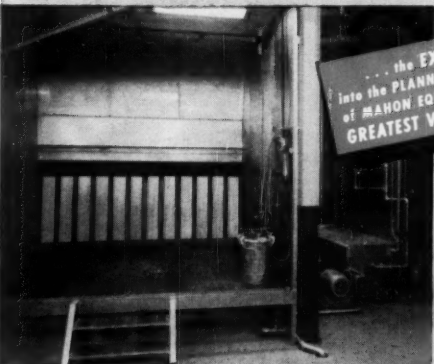
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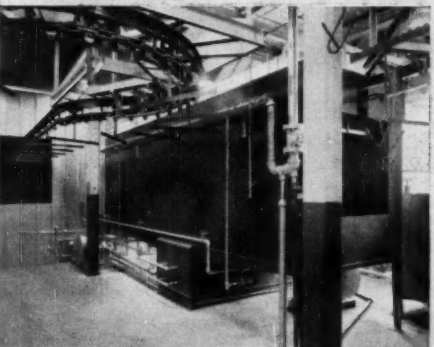
Control Station for the Complete Mahon Finishing System. All Starters and Electrical Controls are by General Electric Co.



View inside the enclosure which houses the Complete Mahon Finishing System installed in the General Purpose Control Department of the General Electric Plant, Bloomington, Illinois.



Mahon Open-Face Hydro-Filter Spray Booth designed to meet specific painting requirements of certain products in the General Purpose Control Department of the General Electric Company.



Mahon Flow-Coater and exit end of ventilated Flash-Off Area and Drip Zone. Part of the conveyorized system at General Electric.

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# MAHON







INDUSTRY IN THE VALLEY, FRANKLINVILLE, NEW YORK—WARD ALLAN HOWE PHOTOGRAPH

*The American economic machine is in high gear and running smoothly, turning out the six basic products of good living and human welfare. As with all machines, however, tampering, careless handling, or over-burdening can cause a breakdown. How can we keep this Machine-For-Good-Living operating efficiently?*

## *Balancing America's Productivity*

ROBERT R. UPDEGRAFF  
*President, The Updegraff Press, Ltd.*

WITH our propensity for summing up everything in neat terms or phrases, we have credited our material attainments almost exclusively to that convenient term, "private enterprise." This is over-simplification.

With the help of inventors, scientists, engineers, production technicians, plus the skill and ingenuity of millions of blue-overall and white-collar workers, American business men have created a mass-production machine which is turning out a wealth of goods and services at so low a cost that they can be enjoyed by all of us. Currently this characteristically American mechanism is not only supporting a high standard of living for the American people; it is also turn-

ing out billions of dollars worth of defense equipment, and supplying a huge volume of goods to other nations.

But mass production is only half the secret.

American business men have also developed a mass-distribution machine which employs aggressive salesmanship, persuasive advertising, tempting packaging, and self-service selling. This combination of characteristically American distribution methods and devices has developed steadily expanding consumer markets for goods and services of all kinds. Increased efficiency in distribution has in turn freed labor for more and more production.

Operating in tandem, these two mechanisms

form the American Machine-For-Good-Living. We commonly think of this machine as producing and distributing two products—*goods* and *services*. Actually, it produces and distributes four other popular products—six in all.

The third product is *jobs*. It is readily apparent that the more goods and services the machine succeeds in producing and distributing, the larger the jobs-product will be. True, with advances in mechanization and the development of new production and distribution techniques, some jobs are eliminated; but over the years the machine has demonstrated an amazing ability to absorb into new industries the workers temporarily dislocated by technological advances in

the older ones. It is equally obvious that the larger the jobs-product, the larger the market for goods and services, since it is jobs-income which creates so large a portion of the market volume. No other enterprise system in the world produces such a high proportion of jobs at wages which enable workers to enjoy the wide variety of goods and services produced by their own labors.

The machine's output of goods, services, and jobs has steadily expanded over the brief span of our occupation of the North American continent. Happily, the production and distribution of all three can continue to expand almost without limit—unless we throw the sensitive mechanism out of balance by overburdening it to the point where it will stall.

### The Meaning of Profits

From the beginning there has been a fourth product of our machine—*profits*—which has provided incentive. This product has brought out the resourcefulness and the creative outpouring of inventions, ideas, and energy which have gone into the building and operation of our highly productive economy. The profits-product has also stimulated the competition which has kept business men on their toes. It is the hope of profits which has provided investors with the incentive to do without things, to postpone their purchases, to invest their money in new profit-making enterprises.

Without profits our whole mass-production-distribution machine would come to a halt. Profits are the basic motivation of our uniquely successful private-enterprise system. They represent the anticipation of gain-through-investment. The worker invests his time, energy, and skill in his job in anticipation of money-compensation and work-satisfactions. Owners or shareholders invest their accumulated savings in this mass-production-distribution machine in the anticipation (or hope) of a profitable return on their money-investment.

The critical attitude expressed by some towards profits is a hangover from the past when there were no income taxes and many businesses were family affairs and their profits could be—and often were—used pretty much at the whim of the owners. But even in the younger days of our industrial and commercial development, many of the owners of these closely held businesses used their profits unselfishly, plowing them back into their enterprises or holding them in reserve to see the business and its employees through slack times.

The time has long since passed when the profits-product of large businesses can be siphoned off for the selfish benefit of wealthy people. Today business profits are heavily taxed before dividends can be paid; and a considerable part of the dividends that flow to the owners are again taxed. The salaries and bonuses of those who manage business enterprises are also heavily taxed.

As for the profits retained in businesses, a con-

siderable portion is applied to research, development and expansion, providing growth and stability and creating more and more jobs, as well as more and better products and services.

Gradually, in one industry after another, it became possible and profitable to install mechanized production systems and processes. The old 60-hour week was no longer necessary. As a result, our mass-production-distribution machine began to turn out a fifth product—*leisure*. Working hours were reduced progressively from 60 to 54 to 48 hours or less per week.

This steady reduction in the workweek represents a corresponding increase in the leisure-product of the machine: free and usable hours for workers to devote to broader and more enjoyable living. Better yet, this ingenious machine of ours began to lift the work burden from men's and women's muscles and backs, so that when their day's work was done they had the physical energy to go places and do things—to consume more goods and services.

Never had the world seen a machine with the magic to produce so many wonderful products—*goods, services, jobs, profits, and leisure!*

Our success went to our heads. We began to gamble on our miraculous machine. In the stock market we speculated in the shares of its ownership—and “floated” more and more shares. Presently, drunk with the heady wine of our success, we began to speculate in everything—not only in stocks and bonds, but in commodities and real estate.

And then came 1929! The demand for the primary products of our machine—goods and services—suddenly collapsed.

It was only then that we learned something extremely important about our Machine-For-Good-Living: that the mass-distribution part was actually more important than the mass-production part, as applied to goods and services. For without dependable and ever-expanding markets for its products, the mass-production part could not continue to operate. It was, of course, still perfectly capable of turning out a steadily increasing volume of goods and services; but to our dismay it suddenly began to produce an oversupply of leisure—in the unwelcome form of mass unemployment.

### The Haunting Past

Slowly and painfully, during the 1930's, we worked and worried our way through the worst economic collapse of modern times. In the process we developed a terrible hunger for a sixth product, which we promptly determined that our machine must produce for us. This new product we gave the appealing name, *security*.

There was so loud a clamor for security from millions of worried people that it attracted the attention of two powerful groups—the elected representatives in our state and federal legislatures, and the leaders of organized labor.

“We will work out a system for giving you security in the form of unemployment insurance,” said our state legislators. And over the

next few years unemployment insurance laws were enacted in many states, to be paid for theoretically (in all but two states) by a tax on the employer. In truth, however, every dollar paid out in unemployment insurance has to be earned by our mass-production-distribution machine; it has to be added to the price of goods and services.

Then the Federal Government introduced a brand of future security labelled “Social Security.” On August 14, 1935, Congress put on the statute books the Social Security Act providing for pensions after age 65, to be financed jointly out of the wages of workers and the gross earnings of business, the funds to be managed by the government.

Our Congressmen were so taken with the vote-getting appeal of Social Security that they did not stop to realize that the whole load would have to be carried by our mass-production-distribution machine. For every penny of the money earned by this machine comes out of Mr. and Mrs. Consumer's pocketbook when they pay for goods and services.

Meanwhile, something had been happening to another important group of producers—the farmers. “Farmers must have security,” declared our elected representatives from the farm states. “We will pass laws that will protect them by setting minimum selling prices for their products. The government must take off their hands all of their production that cannot be sold at these support prices.”

### Price of Security

In justice to the Congressmen who voted for farm-price supports, so serious was the need for some sort of security for farmers that they did not foresee that they were establishing price supports at such high levels that the agricultural part of our mass-distribution machine would balk at the job of distributing their crops. The result was huge unsalable surpluses piled up in government storage bins.

What these two powerful groups—our elected representatives and the leaders of organized labor—did not stop to consider was that our machine must earn the money to pay wages, to meet Social Security payments, to cover unemployment insurance and pensions, to pay subsidies to farmers, and to pay all the federal, state, and local taxes of every business enterprise.

With respect to the tax load of business, Austin S. Igleheart performed a valuable service when he brought out this bald truth in an address before the Grocery Manufacturers of America: “There is an erroneous belief among the public that corporations pay taxes, which obviously they do not. When you tax a corporation you are taxing either the owners or stockholders, the workers, or the people who use the services or products.”

In other words, no business is itself a tax payer, but merely a tax collector for federal, state, and local governments. All taxes are

*Continued on page 87*





1921-1954 \$46.5 BILLION

1955-1964 \$101.4 BILLION

Decade of highway spending proposed by the Administration, shown above, contrasts with total spending over the past 34 years. Bars cut

across drawing of proposed bridge for New York City, one of more than 25,000 bridges and grade-separation structures being planned.

## Highway Construction: A Catch-up Would Mean Booming Markets

*A big chunk of industry could benefit by a 100 per cent increase in building.*

JAMES K. BLAKE, *Marketing Editor*  
JOHN DREXLER, *Associate Editor*

WITH what may turn out to be admirable timing, Clark Equipment Company finished in February a spanking new 150,000-square-foot plant to produce construction equipment. In other companies in the same industry, despite the housing boom, many square feet of capacity are gathering dust. Though the past decade has hardly been harsh on the construction industry as a whole, the highway construction market has until now disappointed many forecasters. Then, suddenly, two months ago the lush possibility of a \$101 billion market extending at least over the next ten years was dangled before the dazzled eyes of the construction equipment industry and suppliers.

One by one manufacturers began spelling out what it would mean for their segment of the

industry and it looked almost too good to be true. Many companies quickly scaled down the program, long before any definitive reactions to the President's proposal were heard.

Even less than a full loaf looked good. Frederick Salditt, for example, vice-president of Harnischfeger Corporation, says, "Even if Congress and the States were to adopt only a \$75 billion, ten-year program, additional requirements plus replacements plus new machine needs to fill the still expanding general construction market spell out a total power crane and shovel market for the next few years of from 30 per cent to 50 per cent greater than in 1954."

Sales Vice-President J. S. Conway of Koehring Company says flatly, "If the proposed program goes through, we look for an increase up to 40

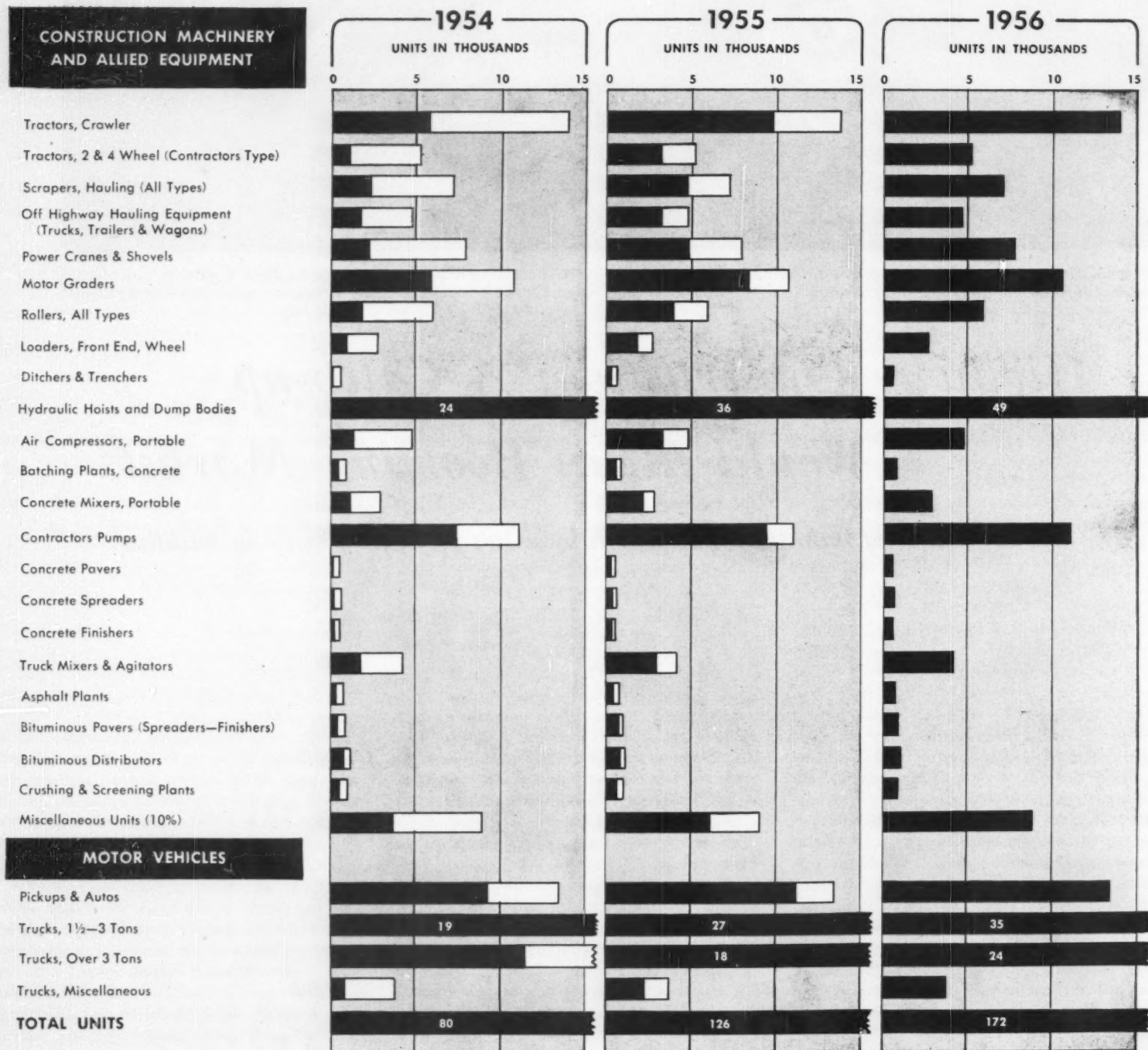
per cent in our total volume. The requirements would build up to a peak in the second full year, taper off in the fourth year, and drop to about one-third of the peak for the last five to six years of the ten-year program. Among our products we expect a 50 per cent increase in power cranes and shovels, concrete conveyors, trenching machines, finishing machines, and batching plants. In small concrete mixers, hauling equipment, and other products in our line we do not anticipate an increase of much more than 20 per cent above current levels."

According to Executive Vice-President Kenneth Lindsay, Iowa Manufacturing Company (crushers and asphalt plants) will step up its

*Charts on pages 40 and 41  
Text continues on page 41*

# Highway Equipment Market Soars Sky-High

*Projected market for equipment manufacturers, shown in lengthening solid bars below, will grow fast during first four years, then tend to level off for final six years of new \$101 billion program now pending approval.*



Source: The American Road Builders' Association.



# For Some Materials, Market May Triple

*In first two years of program, before demand reaches peak, steel demand alone will jump from 1.6 million to 5.2 million tons annually. Moreover, estimates on these pages do not include growing maintenance requirements.*

output materially "25 per cent this year, and when the \$101 billion program is superimposed on that, I would estimate the next year would see an increase of at least 25 per cent over the 1955 program. Then you could look for a similar increase for two more years. After that time it will be a matter of parts."

## Facts Behind the Figures

Precisely what that market will look like is shown on the charts on these pages based on special studies made by the American Road Builders' Association. The charts presume that the program will begin in 1955 and this may turn out to be unrealistic. This year, should the program be substantially approved by Congress and the States, most of the effort will be concentrated in arranging financing and planning the projects. The following year the program would actually kick off in terms of awarding contracts for that part of the work over and above the present \$47 billion program for the ten-year period.

Considered as annual totals, the first year of construction under the program would see expenditures of about \$6 billion (compared with \$4 billion in 1954); during the second year costs would rise to \$8 billion; to \$10 billion in the third year; \$11 billion in the fourth and in each remaining year until the program expires. Consequently, the charts show the market impact for the first and second year of the program, which may be 1956 and 1957, rather than this year and next.

Only a few traditional materials and machinery suppliers to highway construction do not expect to ride the crest of the wave. In most instances, their participation will be limited either by facilities or by technological developments providing more lucrative markets. For example, Fred Foy, vice-president and general manager of Koppers Company's Tar Products Division, points out that conceivably annual road usage of tar would double. However, "In the past, tar has been a by-product of coking operations at steel mills and manufactured gas plants. The rapid expansion of the natural gas industry has caused many manufactured gas coke plants to close and the outlook for those remaining is not promising. Consequently, future

	UNIT	1954 MARKET IN THOUSANDS	1955 MARKET IN THOUSANDS	1956 MARKET IN THOUSANDS
Cement	bbls	49,440	81,427	161,440
Aggregates	tons	357,240	510,069	892,356
Bit. Materials	tons	5,256	7,246	12,222
Lumber	mbm	333	506	939
Timber Piling	l.f.	10,880	16,525	30,645
Steel	tons	1,632	2,651	5,200
Structural	tons	816	1,373	2,765
Wide Flange Shapes	tons	368	619	1,246
Standard Shapes	tons	176	294	588
Bearing Piles	tons	80	135	272
Sheet Piles	tons	32	56	114
Plate	tons	160	269	545
Reinforcing	tons	680	1,103	2,162
Pavement	tons	99	160	314
Bar	tons	581	943	1,848
Corrugated Metal Pipe	tons	136	175	273
Reinforced Concrete Culvert Pipe	tons	2,334	3,359	5,921
Cement for R. C. P.	bbls	2,567	3,695	6,513
Wire Mesh Reinf. for R. C. P.	tons	53	76	134
Clay Pipe and Tile	l.f.	6,880	10,957	21,155
Petroleum Products	gal.	578,160	823,748	1,438,063
Explosives	lbs	79,120	115,811	207,591
Structural Steel Fabrication Capacity	tons	704	1,182	2,379
Signs	each	330	495	908

Source: The American Road Builders' Association.

tar availability will be largely dependent on steel production, which should make available an increase of 35 to 40 per cent over the next ten years." This would not be enough for the tar industry to maintain even its past position in the newly expanded road materials market.

The other factor is price. Tar sells at a premium now over asphalt and the expanding market for various tar derivatives will accentuate that price spread. Therefore, Mr. Foy doubts that tar processors will be able to put much more material into the road market than they are now doing.

The vice-president, sales, of International Harvester Company, Harald T. Reishus, points out that though highway contractors now own about 6,000 rubber-tired, earthmoving tractors, this fleet will have to be expanded at the rate of about 2,000 tractors per billion dollars increase in highway construction per year.

B. H. Johns, vice-president of Thor Power Tool Company, after commenting that he expects an increase of 100 per cent over his present business, points out that the program will give tremendous impetus to new products, which have been held back due to lack of heavy demand. Now, they are likely to pay their way.

#### A Genesis in July . . .

The better outlook in highway construction really began last July, when the President asked the Governors' Conference to study the highway problem and make recommendations. In September, Mr. Eisenhower appointed an advisory committee headed by Lucius Clay, now chairman of the board of Continental Can, to make an independent study co-ordinated with the Governors' research and come up with some answers.

The final report submitted to Congress called for spending \$101 billion over the next ten years. The Federal Government would spend about \$31 billion and the States the remainder. For the most part the program was well received by Congress. It is, in fact, the very nature of the objections to it that encourages manufacturing management. There have been few derogatory comments so far from either of the two major parties about the total sum to be spent. In other words, the need for an expanded highway program is pretty much accepted by the major parties and by the State Governors. The loudest objections until now are those relating to the specific type of financing recommended by the Clay Committee and endorsed by the President, although he clearly is not wedded to the technique. The proposal calls for financing by special bond issues which would be retired by income from gas and Diesel oil taxes plus income from tolls. This method is meeting strong resistance from influential Congressmen and Senators and may be modified or thrown out entirely.

But the key point, and one that equipment manufacturers are keenly aware of, is that the total dollar value of highway expenditures pro-

jected for the ten-year program has not been seriously challenged. A bigger market is definitely on the way.

The full impact on manufacturers, only partly shown by the chart and table, could be striking. The cement industry, for instance, must expand production by about 80 million barrels if other demands remain at current levels. In the fourth, or peak, year of the program, the steel industry will be supplying 1,564,000 tons of steel shapes in addition to the current highway market. In 1954, only 704,000 tons of steel were fabricated for highway construction. The expanded program will take an additional 1.7 million tons.

During the first year, additional equipment requirements will call for 46,127 units, including 28,127 units of construction machinery and allied equipment, and 18,000 motor vehicles. These are in addition to replacement requirements totalling 80,180 units during the first year. There is, in fact, a strong possibility that during the second and third build-up years shortages could occur in some equipment categories such as batching plants and wheel tractors.

Although Administration proponents of this portion of the President's public works program strongly emphasize that it is not a pump-priming device the effect will be inescapably similar. The inflationary aspects would, of course, be heightened if the government resorts to bond financing. Regardless, however, of the type of financing, the stimulating fillip the program will

give the economy will be considerable.

Take only one example: its impact on manpower. According to the Bureau of Labor Statistics, in 1954 there were about 220,000 highway construction workers laboring at the site. Nearly the same number were employed in factories, offices, mines, and transportation systems to furnish materials, supplies, and equipment, making a total of approximately 500,000 workers currently employed in or indirectly by highway construction.

If, according to the BLS, the average work-week declines as expected from 41 hours to 38 hours in 1965, and if contracts are awarded beginning in January 1956, then by 1960 at the peak of the \$101 billion program highway construction will employ roughly one million full-time workers—twice the number currently employed on and off the construction site!

The actual impact is more than double the current number of jobs. That figure does not include, for instance, the thousands of jobs involving highway maintenance and repair or the many jobs created from the newly-found purchasing power of more than 500,000 additional workers.

Moreover, judging by current population trends and by shifts of industry and population into the suburbs, the need for an expanding highway program will not stop dead around 1965. Most manufacturers expect highway requirements to grow, even as the taxes they will engender.

#### MAIN OBSTACLE TO BIG HIGHWAY CONSTRUCTION PROGRAM IS PROPOSED FINANCING METHOD

"I am inclined to the view that it is sounder to finance this program by special bond issues . . ." said the President, explaining the \$101 billion project to Congress. Though Eisenhower seemingly left the door open to other methods, the technique he more-or-less advocated was proposed by the President's Advisory Committee on a National Highway Program.

The Committee had recommended setting up a Federal Highway Corporation to issue taxable bonds.

The major Congressional objection centered about the borrowing method, by which the sums borrowed would not be in the regular federal debt. Many Senators believe this would set up a double debt structure which, they think, could

provide a dangerous precedent.

It is interesting to note that on the State level the use of special bond issues for highway construction purposes has expanded enormously with voter approval.

New York State, for example, will probably submit to the voters this Fall a \$750 million issue. Justifying the issue, the State Commission points out that part of the program consists of the purchase of right-of-way, building adequate roadbeds and drainage which will be owned by the State and used by all the people. In addition, the bonds will be retired well within the usable life of the projects they finance. Except for the New York State provision requiring direct voter approval, the two plans are strikingly similar.





Rogers Corporation multiplies its pick-up of employee opinions by increasing number of employees who take part in monthly, not yearly, bargaining sessions.

# HOW TO LEARN BY LISTENING

ALFRED G. LARKE  
*Employer Relations Editor*

## I. GIVE PEOPLE A CHANCE TO TELL YOU

**N**O MATTER how much or how often men may defame women as gossips and chatters, they always give the girls high marks for being good listeners when they're out to woo and win.

A pretty face or a shapely figure may engage the prospect's attention, but when it comes to closing the deal, astute listening is generally granted to be the lady's most telling technique.

Yet, exposed to this kind of master salesmanship down through the ages, how many men have learned to use it themselves, when their object is to woo and win the employees in their plants to the purposes of the enterprises?

"Employee Communications" became the

shibboleth a few seasons ago; the new model is called "Two-Way Communications." This means that, to tell somebody something effectively, you must also let him speak his mind.

It's a little hard for someone who knows, or is pretty sure he knows, what other people should do, to sit still while they tell him what they think should be done. But it's a fact that some of the most able leaders have paid more than lip-service to the idea of two-way communications. They not only *listen* to their employees—they *create opportunities* for the employees to tell them what's on their minds.

There are a number of ways of finding out what the employees are thinking:

**1. Listen, with understanding ear, to what the union has to say.**

This is not facetious advice, and the word, "understanding," is used in its direct sense, implying neither sympathy nor lack of it.

The union is at best an imperfect instrument of communication, and what it says may be incomplete or misleading. But, listened to with an understanding, it will serve the experienced manager as at least a rough gage of what's going on in the minds of those he hopes to win.

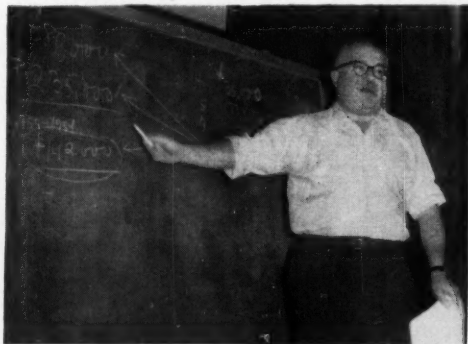
**2. Take an attitude or morale survey.**

This is probably the most frequently practiced method of sounding out employees, and

it is used by large companies and small.

Excellent as the survey may be for some purposes, it has some drawbacks. One is its extreme impersonality. The employee filling in a questionnaire does not feel that he is communicating, he fails to get the satisfaction to be derived from face-to-face talk. The survey can be only part of a full program.

A second liability is that surveys are often undertaken without realization that, if management asks for criticisms, it must act upon them. Too often, survey results are compiled, studied, and filed away with little or no effort to meet the problems uncovered. The employees feel, as a result, that they have been whistling into



President Silverstein expounds a point on wages.



Employees, listening, prepare a union answer.

the wind—and what was conceived as a means of boosting morale may end as harmful to it.

Another consideration in undertaking a survey is that, since results are usually presented statistically, too much emphasis may be put upon majority responses—yet, as we know from political life, people cannot be dismissed like numbers, and the problems of minorities often cause as much concern as those of majorities.

General Motors Corporation, a few years ago, devised an interesting variant on the morale survey. After conducting a corporation-wide "My Job Contest," it found itself with tens of thousands of essays on hand, generally describing what the writer-employees considered to be the good features of their employment.

The essays were coded and analyzed, and the results gave GM a wealth of information on where local plants as well as national policy fell down in employees' opinion, or was strong.

**3. Hold departmental meetings, at which supervision actively solicits comment and questions as to job conditions and company policies.**

Thompson Products Company, Cleveland, has used this method effectively for a number of years. Its policy has been to bring dissatisfactions and lack of understanding out into the open before they grow up into full-fledged grievances.

Thompson Products combines this method with the use of a number of area personnel supervisors whose duty it is to talk to each employee in their areas at least once a week, and to be accessible when any employee wants to talk to them.

The company not only cocks an ear for what it can hear. It goes out and digs for information; it virtually begs workers to sound off.

**4. Provide an easy means for employees to ask questions and a regular channel for answering them, as in the "question page" of the employee publication.**

This is the "open-door policy" with a door that is really open. It takes a lot of courage to stride into the boss's office with a grievance, but it is easier to send a letter.

For the "open question-box policy" to be effective, management must be ready to accept and answer any question and to bridle at none. And the man whose job it is to answer all comers must like that kind of catch-as-catch-can debate. It is a matter of temperament, and the company which has no high-ranking executive able to take on the toughest question and answer it joyfully, as well as satisfactorily to the questioner, had better not start in the first place.

Two companies that have done well in soliciting and answering employee questions are The Detroit Edison Company and United Air Lines.

The Detroit Edison Company has been running a question box feature in its employee magazine, *Synchroscope*, for more than seven years. From the first, as was expected, employees' questions were somewhat aggressive. They were trying out the temper and sincerity of manage-

ment. Seven years later, however, a substantial proportion of the employees who use the question box still tend to needle management a little.

But the company does not find this discouraging. It considers it proof of the continuing value of the undertaking. Says Peter Helmers, editor of *Synchroscope*:

"Charles R. Landrigan, the executive vice-president who answers the questions, considers the question box a very useful element in the candid pattern of employee relations here.

"The questions come in at a remarkably regular pace. Surveys show that this is one of the best-read features in the magazine. This is the case even though some questions are repeaters or concern minor and local problems that could easily be handled by the first-line supervisor.

"This would seem to sustain the criticism that is sometimes made of question boxes—that they by-pass the supervisor. Actually it may indicate a limitation in human relationships, rather than a weakness in the question-box idea.

### Value of Question Box

"No matter how hard a supervisor tries, there can always be an occasion when an employee hesitates to confide in him. The question box gives the employee a chance to go further and ask higher when his psyche, or his ego, seems to need it. Employees are encouraged to sign their names to questions, with the option of asking them to be withheld from publication. Nevertheless, relatively few employees sign their questions.

"From the nature of the thing, a question box is naturally a challenge to management. That may help to explain why the feature has such a high readership. Employees have a great appetite for information from high sources; but they have an interest equally great in the sheer spectacle of management answering questions from the floor.

"Such candor can be very healthy when a company's personnel relations are in good shape, as appears to be the case at Detroit Edison. But in a company that has more than a normal quota of hidden tensions it could have electrifying results. In this respect a question box is a little like having a delicate employee-temperature thermometer that doesn't just go up now and then, but even punches you in the nose occasionally.

"The tone in which questions are answered is of great importance. Even if an employee isn't personally concerned with the subject being answered, he reads with an inner ear for the overtone of friendliness and sincerity in management's answer.

"Cold, impersonal answers can make corporation management sound very abstract and forbidding. The executive answering the questions must establish in print an extension of his real-life personality—warm, friendly, eager for new ideas and improvements. His "no" must have the same human quality and quick glance of

understanding that it would have across the desk.

"Some of the questions that come in are not questions at all, but friendly comments or suggestions. *Synchroscope's* question box receives fewer suggestions since Detroit Edison's award-paying proposal plan went into effect two years ago. Few questions merely ask for neutral information because this is available through other channels. Most of the questions, then, are a little loaded with employee feelings or special viewpoints. When the question box can advise, clarify, or bring a hidden gripe to the talking-over stage, it is doing its job.

"No matter how much informational assistance the executive may get from departmental experts, the answers are still his. The many hours he spends upon them are his, too. But the effort is worthwhile!"

Extensive use of the individual question-and-answer technique is also made by W. A. Patterson, president of United Air Lines, who about two years ago concluded that the task of going through channels to get to the top boss was taking on aspects of a major endurance test for any UAL employee who wanted the final word on any subject.

Every payday, 15,000 employees of the airline receive a blank form in their pay envelopes, on which they are urged to submit any questions they want answered. In every issue of *United Air Lines News*, President Patterson answers 10 to 30 questions in an 1,800- to 4,500-word department that begins on Page 2 and sometimes takes up as much as three-and-a-half pages of the magazine.

Within a few months, he had more than 800 responses to the pay-envelope invitation, and each questioner either received a personally dictated answer; or if his question was of general interest, was answered in the employee magazine. To-day the total of questions runs into the thousands, and so far, he says, there has not been a crank letter among them. Suggestions, requests for clarification, plugs for unions the company deals with, and blasts at the unions, inquiries about business prospects, personal and group gripes—all are answered, with due consideration for the authority of supervisors below as well as for the appeals-court nature of a query to the president.

As Editor Helmers of the *Synchroscope* suggested was necessary, the UAL executive has managed to convey his personality in his answers. He has handled the tough questions with a force of character it must take some courage to summon, and he has tempered the necessary rigidity of big-corporation rules to the personal problems of some of his correspondents.

Whatever the employees have gained by their raising questions of concern to them, it seems clear from a study of Patterson's "Your Visit With the President" pages that he and the corporation have gained as much or more by the opportunity it has created of listening in on what the employees have to say for themselves



**5. Work more of the employees in on collective bargaining sessions; they're your finest opportunity to tell your own story as well as to hear theirs.**

Saul M. Silverstein, president of the Rogers Corporation, Rogers, Conn., manages to get a large portion of his 375 hourly workers, office workers, and executives in on bargaining at least once a year. It is nothing unusual for 30 or 40 to sit in on talks between management and the two unions and one white-collar association in the company.

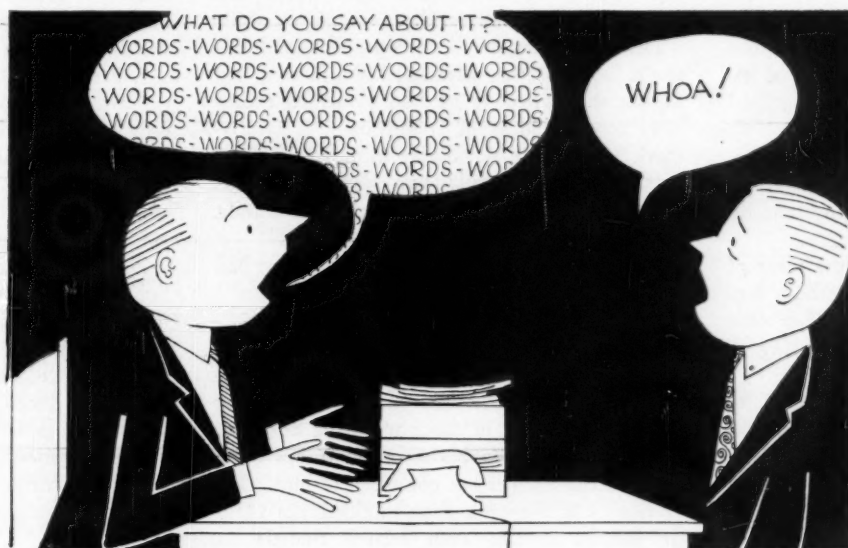
Silverstein urges the employee organizations to send in extra people with its bargaining com-

mittee, on a rotating basis so all get a chance to see, hear, and talk. He pays their lost time, and he schedules bargaining sessions once a month instead of annually so that, "by blowing off steam in ten monthly units, we come into agreement negotiations during the eleventh month with a head of steam that is a little thing—ten of which, put together, could be explosive.

During the year, three-man committees—management, office-workers' association, union—tackle individual problems like insurance or wages. "By the time their reports are ready," Silverstein says, "they really know what they are talking about."

Confident of his own ability to sell a proposition, the president has no fear of what the employee committees may try to sell him, with a goodly part of their constituency looking on.

The Rogers Corporation kind of bargaining has been so successful that company and union recently dared risk putting a real-life, contract-bargaining session on closed-circuit TV for an American Management Association meeting in Chicago. More talking than listening was done on that occasion, but the demonstration made obvious that the best way to find out what's eating the other fellows is not to guess, but to have them in and let them tell it.



First rule for listening is to let the other fellow get a chance to say something.

## II. BE A GOOD LISTENER, YOURSELF

**H**OW TO speak clearly and effectively is the subject of innumerable executive training courses, mail-order and other. Given a free choice, executives on the way up, at least, will elect a course in public speaking as their first preference. And, in recent years, instruction in reading has had increasing vogue. Everyone is learning to read faster and more efficiently.

Comparatively rare, however, is instruction for the individual in how to listen.

A poor speaker finds out the facts of his disability fast, when his audience falls asleep on him, or the man he is trying to persuade stays unsold. And, as the amount of paperwork in business increases, an executive may soon find himself snowed under if he cannot fill his "out" basket as fast as the office mailbox fills the "in."

But poor listening ability appears harder to detect in oneself. The other fellow establishes quality control on one's speaking, but only the listener and slow developments of time can check up on listening skill.

Because listening seems as natural as breathing, unless a man is deaf, it has been necessary to prove that listening abilities differ. Some work in this line has been done by Professor Ralph Nichols, professor of speech at the University of Minnesota, and by Dr. Paul Rankin at Ohio State University.

Methods Engineering Council, Pittsburgh, impressed by Dr. Nichols' observations on listening, incorporated a course in listening in a number of its executive training courses, and found that trainees who started off with instruction in listening got more out of the following

sessions than those who did not have an opportunity for such advance instruction.

On the basis of tests at the end of the courses, according to Warren Ganong, director of training, those who had instruction in listening achieved marks 12 to 15 per cent better than those who did not have it.

Another check the Council uses is to read a short article to a group, then give them a series of twelve multiple-choice questions to answer which will indicate their receptive and reflective comprehension—how much they retain of what they have heard. At best, the testees are about 25 per cent effective at listening, according to Col. Donald E. Farr, vice-president of the organization.

Farr cites Dr. Rankin as establishing from a survey of "management men's" activities that



about 70 per cent of their day is spent in communication, and 45 per cent of that 70 per cent in listening (speaking, 30 per cent; reading, 16 per cent; writing, 9 per cent).

No breakdown is given as between top administrators and middle- and lower-level executives and supervisors, nor among the various purposes for listening.

The obvious main reason for listening is to learn what the other man has to say. But there is at least one other good reason: to give the speaker or speakers the satisfaction of getting something off their chests that has been bothering them.

This second reason may sound like something that has been dug up since Freud, but as a matter of fact, the morale-building value of letting a man talk himself out has been recognized for at least 4,400 years.

Back about 2400 B.C., one of the pharaohs, Ptahhopet, expressed it neatly in his instructions to his viziers and other far-flung officials, in these words:

"An official who must listen to the pleas of clients should listen patiently and without rancor, *because a petitioner wants attention to what he says even more than the accomplishing of that for which he came.*"

The kind of listening the pharaoh asked for is a sort of human relations therapy. Its purpose is more to show respect for the speaker than to gain knowledge of what he has to say—though woe betide the listener who betrays such a purpose.

The whole practise of non-directive counseling is based on this kind of listening, and it is advised by personnel experts both for hiring and for exit interviews, as well as for discussions of

grievances and, indeed, sometimes for collective-bargaining sessions (see Part I).

In most cases where a top executive needs to listen well, however, chances are it is a much more simple purpose that is to be served—getting the most from what others have to say.

How many sales have been lost because the salesman talked too much? How many ideas have been lost because the man who might have received them and made use of them was concentrating on how to break into the conversation, instead of on how to absorb its meat? Many men have talked themselves out of jobs, orders, loans, because they were so intent on telling their story they found no time to listen to the other man's. Or because, being agile mentally, they assumed they knew what the other man was going to say, said it for him—and missed what he really said.

Dr. Earl Planty, executive counsellor for Johnson & Johnson, New Brunswick, N. J., says, "By far the most effective method by which executives can tap ideas of subordinates is sympathetic listening in day-to-day informal contacts. . . . There is no full-blown system that will do the job in an easier manner. . . . Nothing can equal an executive's ability to hear."

Dr. Nichols has compiled a list of eight bad habits that work against good speaking:

1. Hop-skip-jump listening. Average thinking time (400 words per minute) exceeds average speed of talking (125 words). The busy executive therefore falls into the habit of taking outside excursions in thought during another's conversation. When his attention rushes back, he finds the speaker has got ahead of him. Correction: Use the extra time thinking not of irrelevancies but of such related matters as, "What points are already made?" "What facts are not being brought out?"

2. Fact listening. Attempting to spot "just the facts" can be confusing. It's better to go

after the main ideas and weigh facts against them.

3. Emotional deafness. Words and phrases like "Communist," "red tape," "taxes," excite the listener emotionally and tend to deafen him to what is actually said. Deep-seated opinion or prejudices will trip up good listening. In planning embarrassing questions or a smart retort, the listener can miss the true point.

4. Premature dismissal. Some men, feeling they know in advance that a subject will be boring or too difficult, close their minds, let them wander to something more interesting. Yet, the most uninteresting or difficult subject often offers worthwhile ideas to chew upon.

5. Pretended attention. Some think they can get away with pretended attention. They not only waste time but seldom fool the speaker.

6. Criticizing speaker's appearance. A lisp or rumpled clothing have little to do with the value of a talk. Save the criticism until it's over and you know what the speech was worth.

7. Yielding to distraction. When outside hubbub or inner turmoil compete with the speaker, it's easy not to listen. Good listeners fight distractions by doing what they can to reduce outside noise, keep minds on what's being said.

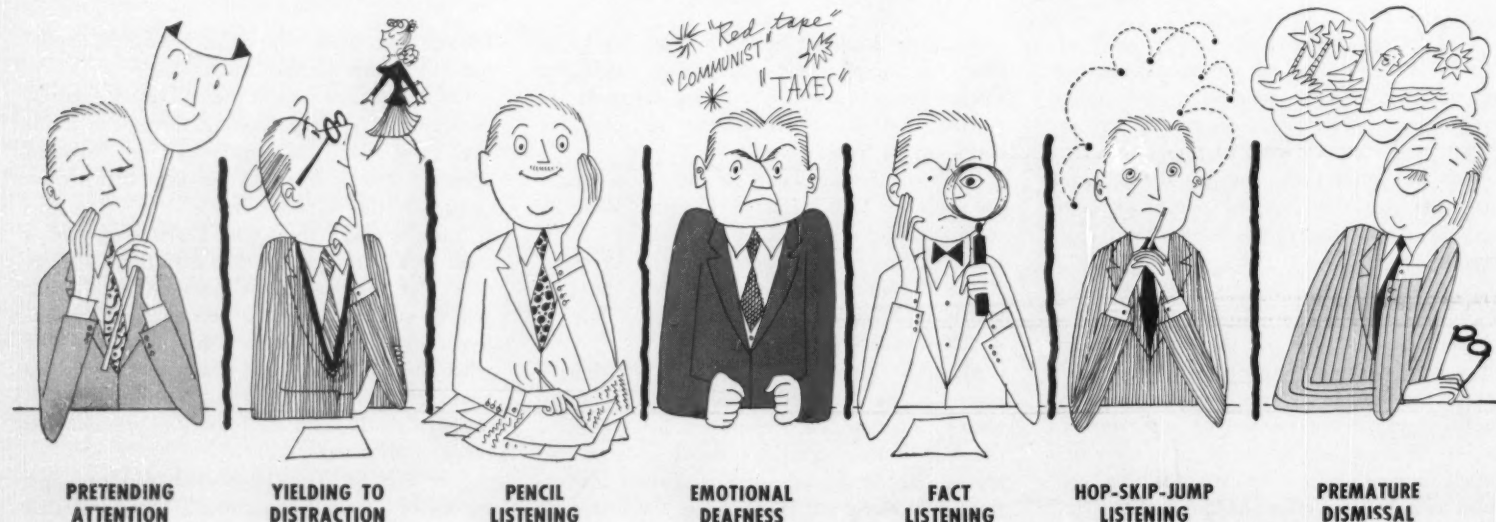
8. Pencil listening. One listens with the ears, not with a pencil, and note-taking seldom improves retention. The note-taker becomes so involved in writing he often misses the sense, like a proofreader looking for errors instead of for meaning.

Good listening habits result largely from a turn of mind. The more one accepts the philosophy that everyone has something worth listening to, the more one gets out of listening.



## Seven Keys to Empty Pate

To drive a man crazy when he's talking to you—and to insure getting little from his talk—try these listening attitudes.







HOWE PHOTOGRAPH

# Water:

## INDUSTRY'S *profitable problem child*

ANNESTA R. GARDNER  
*Industrial Editor*

**N**O MATTER what you make or where you make it, water is *your* problem. It's a big problem, and growing fast. It will affect the location of your plant, the type of equipment you buy, and the cost of your operations. It may even influence the design of your product and the size of your market.

The fact is, getting enough water, of the right kind, and getting rid of it after use, are no longer simple matters. Gone are the days when one simply started a pump to bring clean, pure water into the plant; and then turned a valve to let wastes out. Now, expensive treatment plants are often required to purify both incoming and outgoing water; and processes must be changed to reduce liquid wastes and cut down on over-all water usage. It can make quite a dent in any plant's budget.

Even where water is readily available, it is becoming less effective than it used to be. For instance, in densely populated areas like Long Island, intensive use of underground supplies is bringing a steady rise in temperature.

As Arthur H. Johnson of the New York State Water Power and Control Commission pointed out to a recent meeting of the American Society of Civil Engineers, "In congested areas where there are many closely spaced supply and diffusion wells . . . the temperature of the water in the supply wells is much higher than in the outlying sections. This no doubt is caused by warm waste water discharged from cooling operations. . . . Records of temperatures taken in many supply wells show that, over a period of years, a temperature rise of one and one quarter degrees a year may be expected."

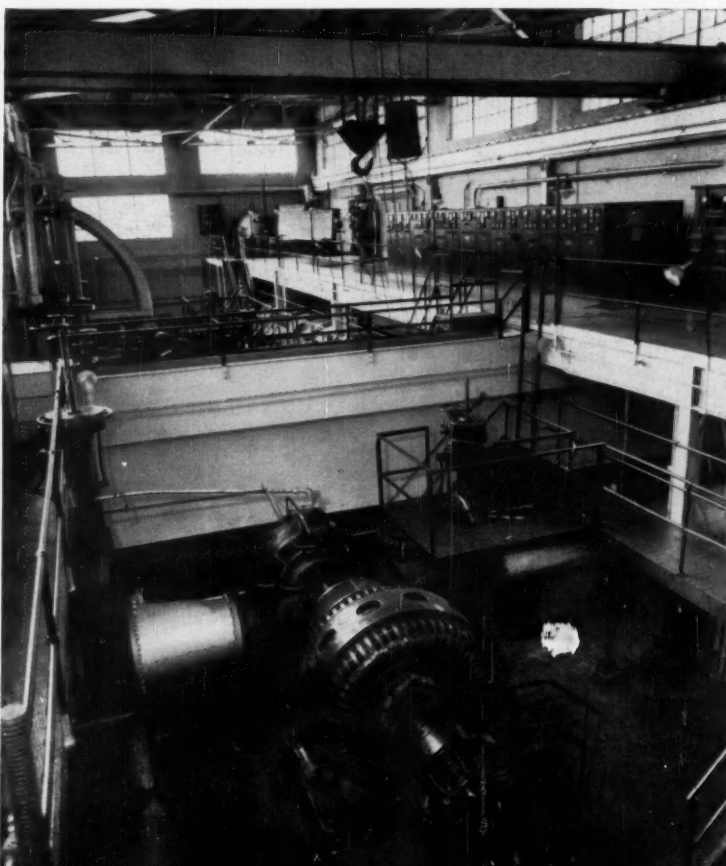
Some food and beverage manufacturers face still another headache: The taste of their products may be adversely affected by measures which in themselves are desirable. For instance, chlorine or fluorine added to the water supply may be good for the community—and very bad for the beverage.

But water supply problems mean opportunities as well as problems for industry. They open the door for many kinds of products.

The need to conserve water, for instance, paves the way for new production processes that may help to reduce water requirements or minimize contamination.

Where water is scarce, industrial buyers are often willing to pay a premium for processing methods that require less water, or, better still, no water at all. They're in the market, too, for

PHOTOGRAPHS FROM STANDARD OIL COMPANY (N.J.)



**New markets open** as industry intensifies its efforts to obtain and conserve water supplies. Reservoir (below) indicates the size of industry's thirst; pumphouse (left) shows the variety of equipment that is needed to slake it.



## Water: PROBLEMS AND PROFITS

*Water is a many-sided problem. It affects plant location, process planning, and product design. It can mean new headaches, but it can also bring broader markets. Here are key questions to ask when you're considering:*

### PLANT LOCATION

- ☐ What are the general water conditions in the area—average annual rainfall (see map, page 50), seasonal variations in stream flow and water level, and so on? (Historical records going back as far as possible should be combed for evidence of "bad" months or years.)
- ☐ Who will your neighbors be? What size communities and what kinds of industries are located upstream and downstream from your site?
- ☐ What effect does water usage of upstream plants and communities have on the supply at your site?
- ☐ How might outflow from your plant affect those downstream from you?
- ☐ What legislation in regard to pollution control and conservation is now in effect, and what new regulations are under consideration by state, county, and municipal governments?

### PROCESS DESIGN

- ☐ Has plant outflow been studied over an extended period to find out exactly what wastes are released, at what times, and in what quantities?
- ☐ Have newer methods of water treatment

and waste recovery—catalytic oxidation, ion-exchange, biological treatment, and the like—been thoroughly investigated?

- ☐ Could you reduce the amount of waste liquid by using more-concentrated materials, purifying and recirculating solutions?
- ☐ Would it be possible to conserve water by using a dry process instead of a wet one (air-cleaning instead of water-washing, for instance), trying sea water or brackish for cooling, or by using dry heat instead of steam?
- ☐ Is your maintenance system geared to find and stop leaks as soon as they occur—before water losses mount up?
- ☐ Are there opportunities to simplify waste treatment by using one waste to neutralize another, redesigning equipment to minimize contamination of cooling or heating media, and removing hard-to-handle materials (with oil-separators, for instance) before they reach the main waste stream?
- ☐ Could the size of water-treatment facilities be reduced by providing temporary storage areas to hold "extra" waste materials produced during periods of unusually high plant activity so they could be treated or discharged at periods of lower activity?

- ☐ Can outdoor lagoons be built to hold and settle waste liquids during periods of low water flow, or when streams dry up?

### PRODUCT DESIGN

- ☐ Are you capitalizing on the marketing opportunities in this field by developing new devices that can help meter, move, protect, or treat water supplies?
- ☐ Do you have a dry material which can do a job now performed by a liquid or slurry? (For instance, a molten salt or metal which might replace a hot-water solution; or an abrasive cleaning process which might replace pickling.)
- ☐ Can you devise a better method or a new sealing compound to prevent liquid loss?
- ☐ Do you have a filter or water-treatment process that might permit more economical recovery of useful materials from waste liquids or permit recirculation of water?
- ☐ Can you adapt equipment to permit use of high-concentration liquids; or to prevent contamination of liquids so they may be re-used?
- ☐ Are you emphasizing the water-conservation aspects of your products in promotion efforts? (Does your air conditioner require less water or no water? Can your equipment be adapted to dry heat instead of steam?)

cooling towers that make it possible to recirculate and re-use water, and for all sorts of metering and control equipment.

A company in a water-short area or one faced by strict pollution-control laws might be willing, or even eager, to consider air blasting as a replacement for cleaning methods that produce liquid wastes; or buy precoated metals to eliminate the need for electroplating.

Water pollution and control even opens a market for radioactive isotopes and Geiger counters. More than one company has used those activated atoms to trace the course of its outflow. Others have used them to remap piping systems when piping diagrams have been lost.

Water problems, then, are well worth management attention from the marketing as well

as the operating point of view.

On the following pages, two articles, one by Secretary of the Interior McKay, and one by R. R. Balmer and H. L. Jacobs of Du Pont's Engineering Department, discuss water resources and the specific efforts each company can make to conserve water and combat pollution. The checklist above will help expose the opportunities as well as the problems.

Additional information on specific topics may be obtained from many sources. Besides government publications (see page 58), a number of excellent reference manuals are obtainable from such local organizations as the Ohio River Valley Water Sanitation Commission. Many railroads, well aware of the importance of water supplies in plant site selection, offer extensive

data on local water conditions.

The American Society for Testing Materials has a comprehensive *Manual on Industrial Water* (430 pages, \$5) which surveys uses, problems, and methods of treatment.

The American Chemical Society, the Industrial Hygiene Foundation, and the Manufacturing Chemists' Association hold regular meetings on pollution control problems, and the MCA has a comprehensive pollution control manual.

A great deal of help may also be obtained from makers of water treatment equipment and supplies; and industrial contractors and engineering firms.

Any one of these can provide a good starting point. And the time to get started is now. Water is your problem—make it a profitable one.





HELEN L. LEE PHOTOGRAPH

# Water:

## GOVERNMENT PLANS *and* POLICIES

DOUGLAS MCKAY

*Secretary of the Interior*

**T**HE importance of water to the future progress of the nation was spotlighted by President Eisenhower's establishment of a Presidential Advisory Committee on Water Resources Policy.

The President's concern with this important resource is found in the letter which designated me, the Secretary of the Interior, as chairman of the Committee. The significant sentence in the letter is:

*"If we are to continue to advance agriculturally and industrially we must make the best use of every drop of water which falls on our soil or which can be extracted from the ocean."*

Thus the President poses the water problem.

As directed by the President, the Presidential Advisory Committee is working on its vital task. From it we hope will emerge a national water policy that will meet the President's goal for the Administration to "furnish effective and resourceful leadership in establishing national policies and improving the administrative organization needed to conserve and best utilize the full potential of our water resources."

For more than a century the Federal Government has played a vital rôle in the harnessing and development of water resources. Unfortunately, though, stopgap or piecemeal measures have been relied upon in many instances, and policies have often been inconsistent.

This situation calls for comprehensive review looking toward modernization of Federal policies and programs.

No attempt is made here to anticipate this review, or to frame a national water policy. I shall confine myself to the situation as of to-day, to measure what we have, where we have it, and to point up some of our shortcomings.

In water, as in most natural resources, we are a "have" nation. Our average annual rainfall is 30 inches—2½ feet—on an area of three million square miles. That adds up to the almost unbelievable total of 1½ million billion gallons.

Of that 30 inches, it is true, more than 70 per

cent evaporates or is used by vegetation, but the remainder—about 8½ inches—runs off over or through the ground into streams and thus becomes available for our use. This is still a tremendous amount of water. And we have made no more than a good beginning in the full utilization of it. We withdraw only about an inch of the 8½ inches, and most of that we put back.

Why, then, is water a problem here in the United States?

One answer is *distribution*. Our huge national wealth of water is not distributed evenly. The annual precipitation is less than five inches in some areas and more than 100 inches in others. Some areas have too much water—most of the time. Others have too little—most of the time. All of them have too much at least occasionally, and too little at some other times.

Another reason for our water problems lies in the way we use this natural resource. To be sure, we put back most of the water we withdraw. But we sometimes put it back in pretty foul condition, and we often pollute the remainder.

Our basic need, then, is for effective yet practicable control of water use. A prime aim of our national water policy should be to achieve that control without undue restriction of our general freedom of action. With this thought in mind, let us look briefly at the nation's water problems, and then at some of the things the nation should be doing about them.

We should look first at our natural deficiencies or excesses of water—at the places where even in a year of normal weather there generally is too little water, or too much, or even both at different times.

The largest and most obvious area in this category is in the West, where there is a habitual water shortage, at least so far as potential demand is concerned.

It is not only west of the 100th meridian, however, that chronic water problems exist. There is a large area in the midcontinent, of which eastern Kansas is typical, where the un-

derground formations are unfavorable for absorbing and storing large volumes of water. Well yields are meager; water levels tend to get low even in "normal" years; and the smaller streams, and sometimes even the larger ones, dry up.

Somewhat similar conditions are found scattered throughout the entire Eastern half of the country—in areas where unfavorable rock formations prevent proper water storage.

Large tracts in the tidewater country of the Atlantic and Gulf Coasts also lack abundant supplies of fresh water. The streams are tidal and brackish and the underlying sands are filled with saline water.

There are other areas of naturally unfavorable water conditions, but these should suffice to emphasize the point that uneven distribution is at the root of most of our water troubles.

So far, we have mentioned only what happens in an ordinary year. In many areas there are periods of deficient or excess precipitation which bring problems similar to those imposed by seasonal climatic changes in an average year, except that they are more severe and protracted.

The arid Southwest, a land of delightful climate and rich soil, has been in the grip of a drought most of the time since the record-breaking wet year of 1941. During the last two years the drought has spread across the entire midcontinent, even to the Eastern seaboard, recalling the severe drought of the early 30's.

These natural differences in the availability of water from place to place and time to time are not our only troubles. We have increased existing problems, and have created entirely new ones, by exceeding the natural rate of replenishment of dozens of ground-water basins so that we are now drawing on capital that is either irreplaceable or can be replenished only by drastic economy of use.

We have overdrawn streams for irrigation even in some of the wettest areas of the country, like southwestern Louisiana, permitting salt wa-

ter to flow in from the sea and to contaminate adjacent water-bearing beds. In some places, we have drawn ground water from coastal underground water sources at a rate that has caused the encroachment of saline water underground, notably in southern California, Long Island, and Florida.

We have drained swamps like the Everglades in order to cultivate them and then have found that failure to provide water-level controls has led to overdrainage with its accompanying lowering of the water table, drying and burning of peat soils, and encroachment of sea water.

Even where neither salt-water encroachment nor depletion of an entire underground water source is concerned, we have lowered ground-water levels by local concentrated pumping.

In addition to overdrawing our supply, we have made open sewers of most of our major streams, and many of the smaller ones. In so doing we have greatly increased the cost of water treatment for those who must use the water, and have destroyed fishing and recreational values that were once a matter of livelihood to some and of wholesome recreation to others.

As a nation, we now need to take a long look at the whole water situation to determine how we can best assure ourselves enough water for this generation and manage to pass on to future generations a decent heritage of water.

Our water problems will be on the way to solution only when there is realization at every level of our national structure that water is *everybody's* business.

Obviously, before we can do much about developing, conserving, safeguarding, or improving water supplies we ought to know as much as possible about the water resources themselves—where they are, how much there is in each locality, and what kind of water it is.

To attempt to do otherwise is like trying to

design and build a factory without knowing how many bricks you have, or even whether bricks can be used for that particular job at all. Yet, in the field of water we have for a long time been trying to design efficient, economical water systems without adequate facts about the water source. In such an attempt there can be only one of three results—you can get about the right answer by accident, which is a pretty risky way to go about spending large sums of money; your project can fail, which is disastrous; or you can overdesign the system to allow for errors in estimating the amount of water available, which is an economic waste.

Because investigations to get the necessary information take time, while our demands for water are with us to-day, we shall have to design some projects without enough basic data. But we could do a lot more than we are now doing to get the facts. The sooner we start, the more we will save in the end through efficient, economical operation of water-use projects.

Among the important fields in which research is needed are conversion of saline water and reclamation of contaminated water. There are areas, particularly in southern California, where it is disturbingly clear that present uses account for nearly every drop of the dependable local water supply, and millions of gallons a day must already be brought in.

Any process of saline-water conversion that would bring new water to these areas of southern California at a cost less than pumping it from the northern part of the state would be a tremendous boon. The same is true of other coastal and some interior areas which are near sources of saline water.

In the field of reclamation of water that has been contaminated by use, the greatest burden will fall on the shoulders of the water users themselves. The principles of treatment and rec-

lamation of domestic sewage are pretty well known, but there is still much to be done to devise economical methods of treating industrial wastes, both to permit re-use of the water and to prevent contamination of water bodies into which the wastes are discharged.

Industry has done a good job in most cases and, with negligible exceptions, has co-operated with public bodies established to alleviate pollution. The high tempo of our industrial expansion, however, requires that we constantly increase our efforts toward pollution abatement.

Obviously, we need a national water policy. But, to a freedom-loving people, this certainly should not mean the setting up of a Federal bureau having the responsibility and authority to supply everyone's need for water, even if to create such a bureau were practicable, which it is not. It does mean that we must have a universal awareness of these vital facts:

1. Our water resources, though capable of meeting a vastly increased total demand, have local limits that are being reached or exceeded in one area after another.

2. The cost of developing water will rise as the more readily available sources are exploited. Water, though still the cheapest commodity we can buy, no longer is so cheap that it can be taken for granted or used wastefully. We must be prepared to pay bigger water bills, and we must find—we will be forced to find—ways to economize in the use of water.

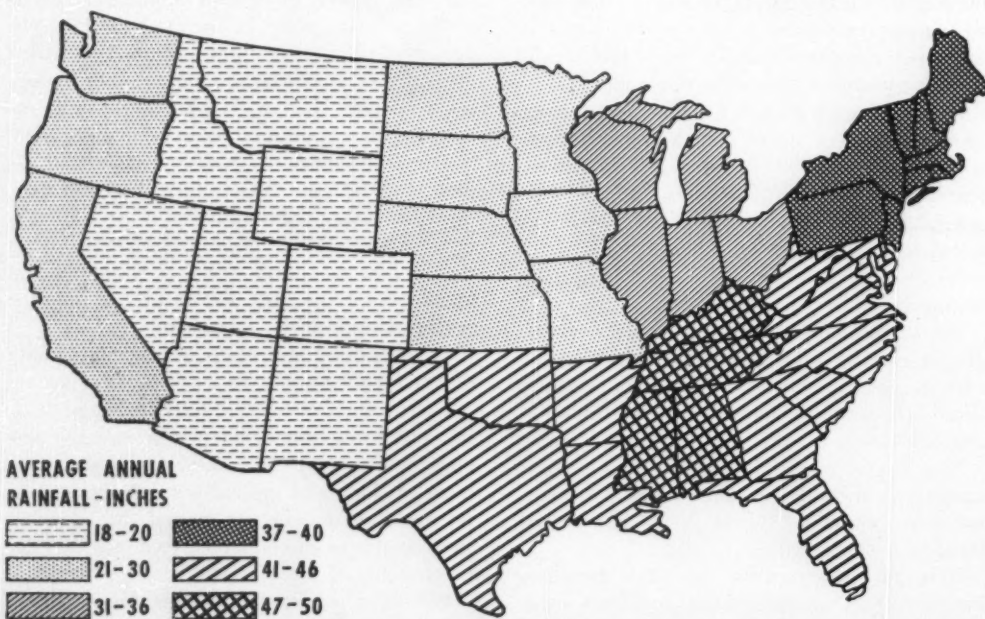
3. Almost every use of water must be considered not only as to its value and cost to the user, but as to its present or potential competition with uses of water by others. The uses—and abuses—of water are inherently competitive since water flows from one area to another carrying undesirable wastes contributed by one user to the intakes of others.

If we approach the problems facing us intelligently, we shall have enough water to meet our needs for the foreseeable future. To meet them abundantly yet efficiently and economically will call for greatly intensified hydrologic research and water-resource evaluation, and, ultimately, for intensive joint planning and a rather high degree of control of different water uses.

Those objectives will require a substantial amount of legislation at the state level to provide both for regulation of water uses and for necessary interstate co-operation. It doubtless will require also some additional Federal legislation to provide for accelerated water-fact gathering and for assistance in planning water projects having interstate aspects.

In the American tradition, however, planning and control should be achieved, and I am sure will be achieved, largely through the interested and voluntary co-operation of all our people, with a minimum of restrictive legislation.

I confidently expect that our business men and industrialists will take the lead in the task of implementing these general objectives, as they have in countless other jobs involving American community effort.



Rainfall is only one of many factors that affect water supply, but it can be a starting point for plant site investigations. Long-term records will help uncover potentially troublesome dry periods.





PHILIP GENDREAU PHOTOGRAPH

# Water:

## WHAT INDUSTRY CAN DO ABOUT IT

R. R. BALMER AND H. L. JACOBS

*Engineering Department*

*E. I. du Pont de Nemours & Company, Inc.*

**W**ATER is as necessary for the existence of industry as it is for human life. Without water, the manufacture of steel, paper, textiles, petroleum, chemicals, and many other products could not exist, at least as they are known to-day.

Considering the value of water, it would certainly be desirable for industry to have full control of its supply, and to have a substitute material ready to fill its needs. Yet man can alter the supply of water only slightly, and though this is the age of synthetics and substitutes, no one has come up with anything remotely resembling a substitute for water.

It is not surprising, then, that industry tends to concentrate in areas providing good water facilities and that people tend to concentrate in those same areas, too. Because of this concentration of industry and people, overuse and pollution of water become major problems. In many cases the outfall sewer from one industry contributes directly to the water supply of a neighbor downstream. So, the care with which industrial effluents and sewage are handled influences the industrial growth which a given area can tolerate.

Water shortages can be blamed on many things. The most important of these is, of course, lack of rainfall.

Water yields from underground water sources are also limited by physical features such as permeability, rate of water movement, natural head and proximity to salt water. In the latter case, overpumping of a fresh water stratum can cause serious difficulties through salt water intrusion from an adjacent ocean or estuary.

Finally, of course, water shortages can be created by the unintelligent use of the water which is available, through selfishness or carelessness or both. In other words, water can become short because it is wasted.

A leak the size of a lead pencil in a pipe-line carrying normal household pressure will cause the loss of nearly seven million gallons of water annually. That is enough to satisfy the full

domestic needs of about 250 persons.

When water shortages exist, they can seldom be cleared up overnight, but nearly always, steps can be taken which will ease the immediate problem and ultimately correct it.

In areas where water is in short supply, industry can and must devote every effort to the more efficient use and reuse of this resource. For instance, cooling water can often be passed through more than one piece of equipment. Process water can be cooled and recirculated, leaks can be stopped. A critical survey of plant needs may turn up several instances of this nature.

An unusual method for overcoming a water supply problem is that practised by the Bethlehem Steel Company at Sparrows Point, Md. Bethlehem purchases treated sewage water from the City of Baltimore and uses it for cooling and quenching purposes. Since the sewage effluent is the result of complete treatment of sanitary wastes, the quality is quite good and a minimum of treatment by the steel company is required before it can be put to work. There are doubtless other locations throughout the country where similar arrangements can be made.

At a large Du Pont plant located on the Delaware River where brackish water is seasonally encountered, three different methods of obtaining suitable water are practised:

A well has been installed to obtain water for drinking and for critical cooling purposes.

A surface stream has been dammed to provide fresh water for boiler feed and for certain process uses.

River water is used for the bulk of the cooling chores about the plant.

Here, the water needs are such that no single supply is adequate but careful planning has permitted expansion to take place.

In some cases, flood waters can be retained in storage reservoirs for future release during critical low flow periods. One company in northern New Jersey recharges an underground water

formation by damming the South River, thereby flooding an area adjacent to a well field to increase infiltration. In the Louisville area, several industrial plants agreed to curtail their pumpings from underground sources in order to prevent a further drop in the water level. Each plant found it necessary to augment its supply by drawing from the adjacent Ohio River. In these and other ways, water shortages are eliminated or avoided.

It is obvious that the pollution of surface and underground waters can make our water shortage problem even more acute. But "pollution" is a hard thing to define. There have been many attempts to do so, but to date none of the definitions are adequate, in a legal sense. There are many popular definitions, however, one of which is to the effect that "too much" of anything can be defined as pollution. Another is that pollution occurs when something is added to the water which destroys its value for subsequent legitimate uses by others.

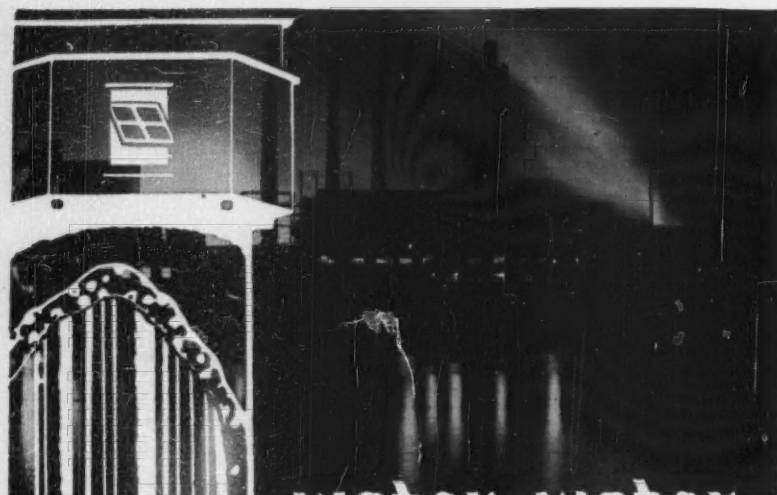
In any event, it cannot be denied that the discharge of wastes by industry may alter the character of receiving waters enough to reduce its value for subsequent use.

Solids which settle to the river bottom will blanket it and thereby prevent the natural growth of plant life which is so essential to the production of dissolved oxygen and the propagation of fish.

Organic matter may be discharged in sufficient quantities to reduce the dissolved oxygen in the water substantially or even to eliminate it completely.

Acids and alkalis can change the water characteristics to such an extent that fish cannot survive or so that the water becomes unsuitable for subsequent use without extensive treatment.

The steps which can be taken to correct pollution are legion when one considers the entire realm of industry. In individual cases, however, only a few of the many possibilities may prove practical. Such obvious measures as strict atten-



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tion to good housekeeping have done wonders at many plants in reducing the amount of waste material entering the sewers.

Frequently, a careful study of a process will indicate certain changes in methods of operation which will either eliminate a waste material or will change it so that it can be recovered as a by-product. Thousands of tons of used sulfuric acid are reclaimed annually in this way.

The pulp and paper industry is gradually learning to retain waste fibers and to return them to the process. The steel industry has for years sintered its flue dust and returned it to the blast furnaces. The Calco Chemical Company at Bound Brook, N. J., has for the past several years used a waste slurry of calcium carbonate from a nearby plant of the Johns-Manville Corporation for neutralizing the free acidity of its effluent. The rayon industry has been using waste Glauber's salts for years in the manufacture of cellulose sponges.

To reduce the quantity of waste liquid, surface condensers can be substituted for water and vacuum jet condensers, eliminating waste-to-water contact, and producing a

more easily handled waste.

The use of modern instrumentation in controlling feed rates, heating cycles, and other process variables is an excellent means of maintaining high yields with consequent reduction in sewer losses.

It will usually be more profitable for a plant to reduce wastes by adopting measures like these than to attempt to treat waste liquids. But, in some cases, treatment is unavoidable.

Here, by-product recovery should certainly be taken into consideration, but its value should be closely understood.

Because a few recovery schemes have paid for themselves, some people have gotten the idea that industry can easily afford to clean up all its pollution problems immediately. The fact is that these profit-making recovery schemes are few and far between.

Waste abatement, whether by recovery or treatment, is an expensive business when viewed as a whole. The Manufacturing Chemists' Association estimates that 2½ to 4 per cent of the construction costs of the chemical industry are for pollution control equipment. And much

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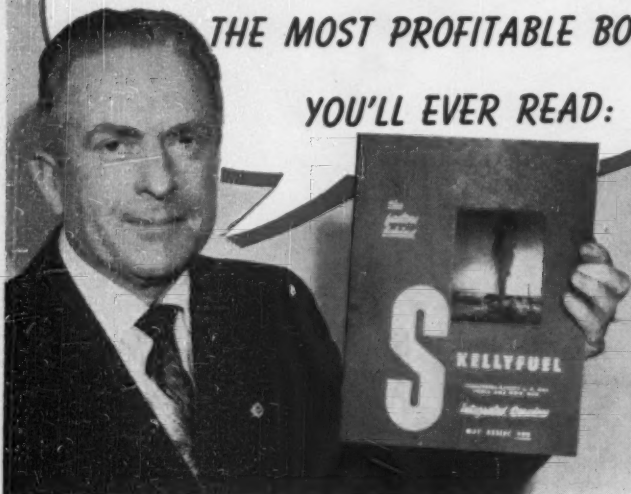
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dent Henry B. du Pont in a speech made before the Second National Air Pollution Symposium in Pasadena, Calif., on May 6, 1952. On that occasion, Mr. du Pont stated, "I cannot speak, of course, for industry generally, but I can say that our company considers pollution abatement as one of its first responsibilities. On new plant construction, our top-management policy is to insist, before approving a project, that all pollution problems be solved *in advance*."

Once top management has expressed itself on policy, it should make sure that this policy is understood all the way down the line. If necessary, an educational program should be instituted so that the plant superintendent, the research worker, the janitor, and even the telephone operator shall know that their company is "agin" pollution and that it is doing something about it.

Another step which should be taken by management is to designate a committee or an individual, depending upon the magnitude and nature of the problem, for the full responsibility to investigate and recommend methods for *correcting* the pollution problem. This may be a difficult step to take because there is an understandable resistance on the part of plant management against assigning production personnel to what they consider non-productive jobs. This move is essential, however, if real progress is to be made.

When a problem has been investigated thoroughly and when recommendations for correction of it have been made, management should implement its policy by authorizing the necessary funds for the required facilities.

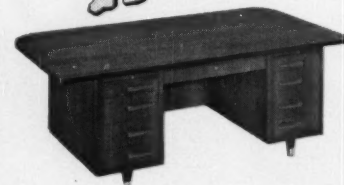
It will be necessary for someone in the plant to deal with the control authorities. This should be the job of the engineer who is heading up the investigation since the authorities will be interested in the details of the problem as well as in the broad general attitude of the company. Management should understand that the control authorities are anxious and willing to assist industry in the solution of its problems as well as to police its efforts. A spirit of frank and open cooperation is one of the most helpful attitudes that management can foster.

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Depleted water supplies and a consequent degenerating quality of water has caused much concern in industry. Even a small quantity of silica sand or organic impurities in water causes increased maintenance costs and reduces the quality of many products.

### Some examples

One firm's problem was the breakage of their welding tips. The welding tips would become burned, turn brittle, and then break. Dirt in the cooling water was suspected, and Sparkler diatomite filters were put on the job. The life of the welding tips was extended eight to ten times by the use of filtered water.

Another firm has produced an off-white chemical for many years. Their source of water is a highly colored river which is heavily contaminated with industrial wastes. Sand filters had been used for many years but the product always carried a color trace from the raw water. When it was decided to improve the product's color, two 400 sq. ft. Sparkler diatomite filters were installed. This firm now produces a true-white chemical and have been rewarded by an increased demand for their product.

A third firm obtain their water from deep wells. The water, while fairly clear, contained a definite amount of very fine sand. This sand caused excessive wear in high head pumps and clogged fine fog nozzles interrupting production and increasing maintenance costs. Sparkler diatomite filters were installed on this four-million-gallon-a-day applica-

tion and completely removed the above troubles.

The low initial cost of diatomite filters combined with their low floor space requirement and ease of operation have proved very attractive to industry. The diatomite filter will remove all silica sand, algae, organic matter and silt from water sources such as wells, rivers, or lakes. Bacteria is reduced 80% or even more in some cases. The quality of filtered water is always constant, no deterioration or variation is encountered. Add to the above that one filter can be cleaned with the output of a second filter, which eliminates the need for oversize pumps or large holding tanks for filtered water, and the reasons for the interest in diatomite filters are quite apparent.

The Sparkler Model SCJ diatomite filter is designed specifically for large volume water filtration. Available in sizes up to 2000 sq. ft. of filtering surface with capacities up to 5,000,000 gal. per day in a single unit. Multiple units engineered for larger requirements.

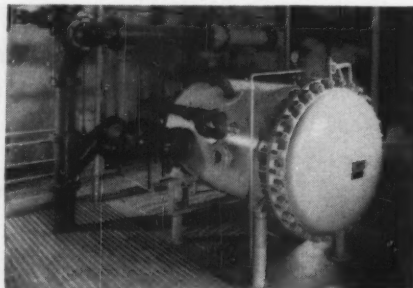
The original cost of a Sparkler diatomite filter is about 2/3 that of a sand filter and the floor space required less than 1/2.

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One facet of the pollution abatement crystal which is management's responsibility, is that of deciding what, when, and how to inform the public about the activities of the company. The public has a right to know what industry is doing to eliminate a nuisance or a potential hazard to its well-being. Progressive managements would be well advised to demonstrate their concern and keep the public informed of their pollution abatement efforts.

One final point deserves special mention: the rôle of water supply in the selection of new plant sites. The alert management makes sure that water availability and waste disposal requirements are thoroughly investigated before the final choice is made. The subject may seem academic to some but others know that there are plants in trouble to-day because water supply and waste disposal did not loom large enough in the initial site selection.

The proper evaluation of receiving waters in connection with waste disposal is important and is becoming more so. The river or lake on which the plant is located and into which its wastes are discharged inevitably becomes the source of water supply for others and it will supply and absorb just so much before it becomes a liability instead of an asset. All existing records of water quantity, flow probability, and other data should be studied.

To obtain a long-term picture of the quantity of water available, the *Surface Water Supply Papers* of the U. S. Geological Survey for the entire period of record should be studied.

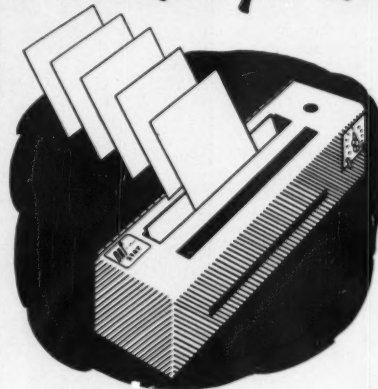
Current data on water supply and treatment are contained in *Industrial Utility of Public Water Supplies in the United States*, obtainable from the Government Printing Office. The Geological Survey also prepares a monthly *Water Resources Review*.

Also important considerations in new plant location are the present upstream users of the water supply, and the probable future growth of the area.

The legal restrictions on water usage are increasing, and in some cases are already limiting factors. In Texas, for example, surface waters belong to the state and are apportioned by the State Board of

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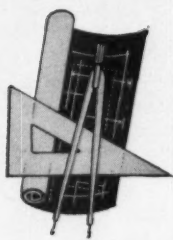
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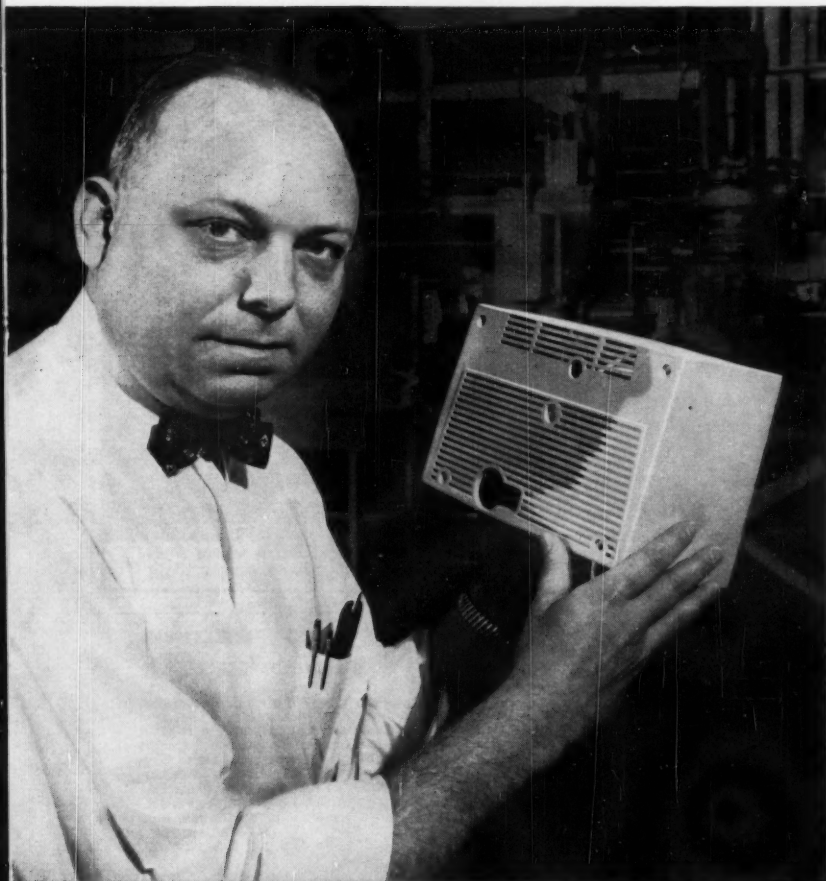


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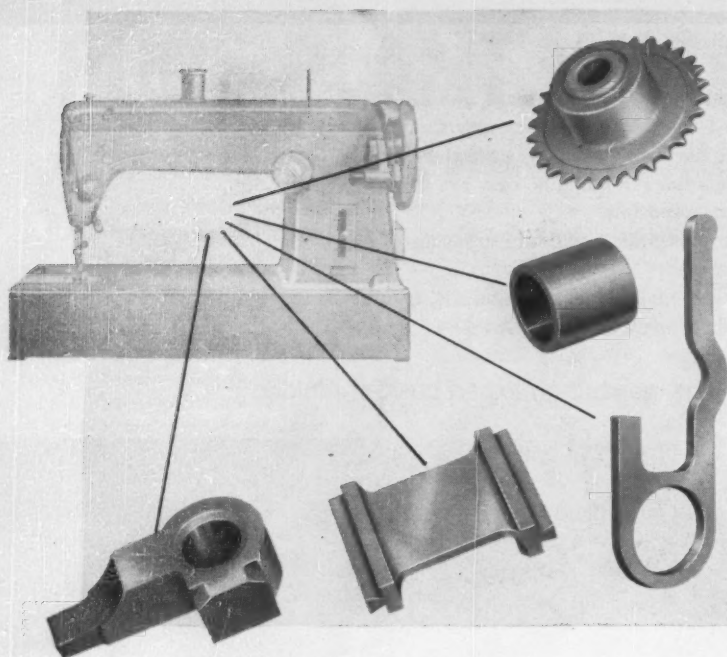


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Nearly every state now has some sort of regulation governing the discharge of sanitary and industrial wastes. In many states, a permit is required before a new outfall is constructed if discharge is to state-controlled waters. Even though a permit is not required, a meeting with the control authorities is desirable. Frequently, information will be obtained in such a discussion which will influence the selection of the plant site. This early conference will not only be of benefit for site study purposes, but will begin a period of good will and co-operation which will continue to the advantage of all concerned if the site is selected. The state agency will be in the know and will be much better able to answer inquiries from the general public and to allay any fears that may arise concerning potential pollution problems.

Last, but by no means least, the character of the plant wastes should be determined as accurately as possible. Such information as probable chemical composition, total solids, suspended solids, color, oxygen consumption, and toxicity should be at hand. Only with such information can the effects on the receiving waters be predicted.

The problems of water shortage and pollution abatement are amenable to solution. They must be solved if the nation is to expand and prosper. Actually, the major problems are economic, not technical. It is true that some wastes cannot be economically treated or recovered with the present state of technical development. But ultimately, technology will have to advance or the products which create these wastes will be forced to disappear from the market.

There are many people who think that these problems cannot be solved without Federal Government control. While it is true that the Government can assist, it does not necessarily follow that it must control. Private enterprise is equal to the task of preserving and protecting our greatest natural resource—water—and it can and will make great strides in the years ahead.

# NOW!

Quickly, Easily, Effectively Destroy confidential papers, records in your own office!

**NEW SHREDMASTER**

## Bantam 10

portable shredding machine designed especially for office use! Quiet, compact, streamlined!

Never before an office shredding machine combining the speed and economy of the new SHREDMASTER BANTAM 10. Anyone can operate it. No fuss, no trouble! Greater cutting width, speed, capacity, and power than ever before! Safety throat! Smart functional design, about size and weight of business typewriter.

Priced well within the budget of all businesses - large or small.



FREE: Colorful, illustrated, descriptive folder, includes 10 DAY FREE TRIAL details. Write "SHREDMASTER BANTAM 10" on your letterhead or postcard, and mail today to:

UNREADABLE  
SHREDS COME  
OUT HERE

*The* **SHREDMASTER**  
*Corporation*

A Division of Self Winding Clock Company, Inc.

195 Willoughby Avenue  
Brooklyn 5, N. Y.

### ARE YOU FEEDING YOUR PIG?

Only completely modern materials handling equipment can feed your new automatic production machinery all it can eat. See the latest in materials handling equipment designed to keep pace with automation, exhibited by hundreds of the industry's pacesetter companies. For free tickets write: Clapp & Poliak, Inc., 341 Madison Ave., N. Y. 17.



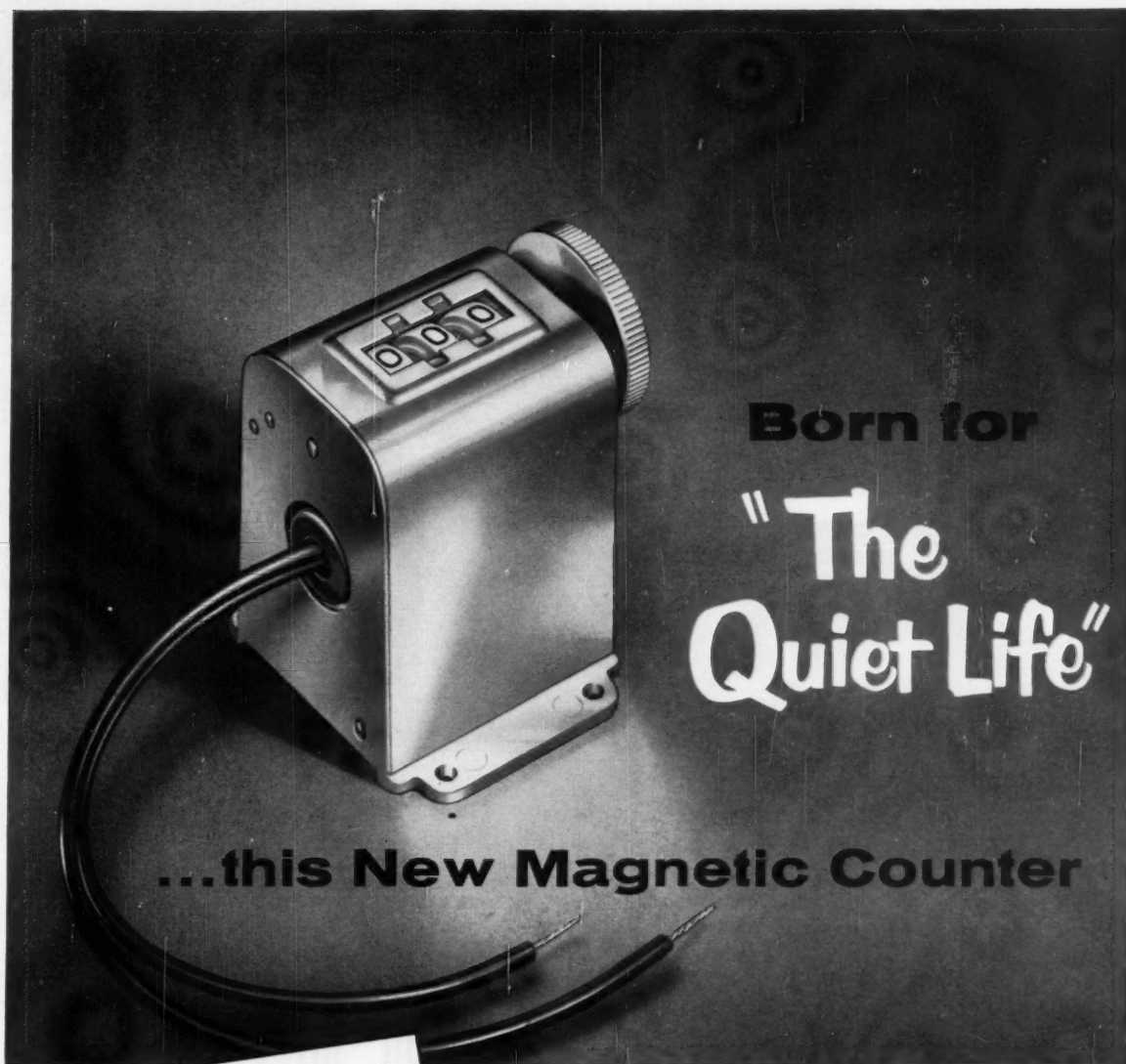
### 6th National Materials Handling Exposition

International Amphitheatre, Chicago  
May 16-20, 1955

*Louis J. Glickman*

REALTY INVESTMENTS  
565 FIFTH AVENUE • NEW YORK 17, N. Y.





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**"The  
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**...this New Magnetic Counter**

**Added Evidence  
 that—**

**Everyone Can Count on  
 VEEDER-ROOT**

For moderate counting duty, where extreme long life is not required, this new small reset counter is completely reliable. Compact and easily connected, this counter may be actuated by any type of switch, relay or photoelectric unit. Recommended speed is 700 counts per minute. Power consumption is low . . . and so is the

price . . . but still the same Veeder-Root high quality. So here again is proof that you can count on Veeder-Root for any type of counter . . . electrical, mechanical or manual . . . for any type of duty in any field from atomics to electronics. What do you need to count?

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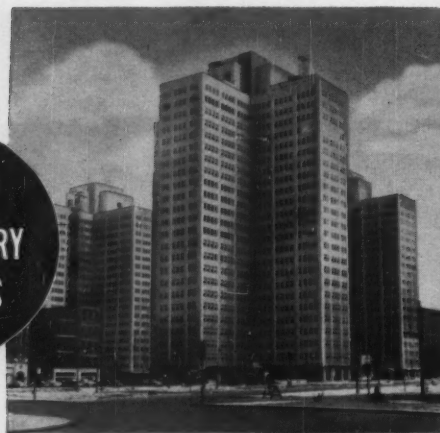
**VEEDER-ROOT INCORPORATED**  
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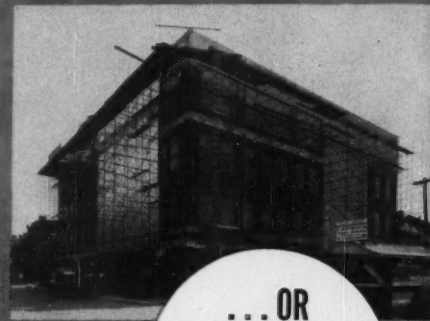
Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.  
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**"The Name that Counts"**

FOR NEW  
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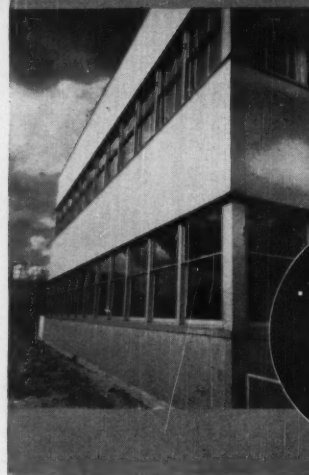
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... OR BIG  
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OFFICES



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INDUSTRIAL  
BUILDINGS



## STAINLESS CURTAIN WALLS

give you the best "long pull" investment

### "INFO" for Architects and Builders

- 1 "AL Structural Stainless Steels"—12 pages on stainless grades, properties, forms, finishes, standard "specs," uses and advantages.
- 2 "Stainless Steels for Store Fronts and Building Entrances"—40 pages of valuable data on examples and details. AIA File No. 26D.
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Write for Details

Address Dept. DR-64

Curtain wall panels faced with Allegheny Metal have *all* the advantages. They can give your building the truly modern look. They have a soft, highly attractive luster and permit wide latitude in design for individual appearance. They're light and strong . . . can be used for sheathing or "face-lifting" operations on existing structures, as well as for any type or size of new commercial building or institution.

*Compared to brick or masonry construction,* stainless curtain walls present savings at every turn: in lighter foundations; in enlarged floor space; in fast all-weather erec-

tion; in reduced maintenance, easy cleaning and freedom from painting. And—*compared to any other curtain wall facing material*—stainless steel is the hardest, strongest and most resistant to smoke, fumes, weather, wear, etc. It is the one material that can best take a beating . . . that costs the least in the long run because it lasts the longest.

Our Engineering and Research Staffs, etc., are at your service—anywhere, anytime. • Let us work with you. *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa.*

Make it **BETTER**-and **LONGER LASTING**  
with **Allegheny Metal**

WAREHOUSE STOCKS CARRIED BY ALL RYERSON STEEL PLANTS



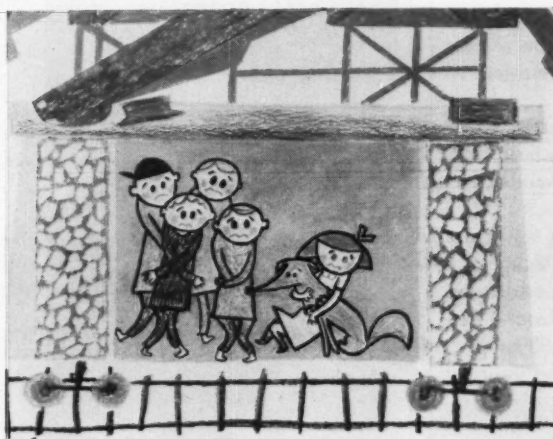




*Glass and You*



*How to Sell Quality*



*Hooray for Homer*



*Farm Family American*

## Films

### FOR MANAGEMENT

*Reviews of new films made by or for management . . . .  
Case histories of how business is getting results in  
using films for public relations . . . sales promotion . . .  
training . . . safety education, and many other tasks.*

THERE had been some apprehension a year ago—primarily among film producers—that the expiration of the Excess Profits Tax at that time would reduce business expenditures for motion pictures and other visual aids. But apparently the fears were groundless. According to the latest annual survey, released last month, by *Business Screen*, business spent about 10 per cent more for new films in 1954 than in the prior year, thus maintaining the rate of growth of recent years.

In addition to spending millions for new films, business has continued to expand the showing of films made by other companies as well as training films which are rented to business. One film distributor supplies films to about 12,000 industrial plants in which non-theatrical films are shown to thousands of employees each week. Besides, there are uncounted thousands of showings for technical groups, sales meetings, conventions, management training programs, trade associations, and service clubs.

One business film, *It's Everybody's Business* (DUN'S REVIEW AND MODERN INDUSTRY, September 1954, page 53), has been seen by 31 million Americans—30 million on TV—since its release last year.

#### Reel Briefs

*Glass and You* (27 minutes, color) is the most ambitious film effort yet conceived to tell the story of the fragile product which we always see around us. That glass is no longer fragile but robustly versatile is one of the conclusions offered in this new public relations film sponsored by Corning Glass.

After taking the viewer on a very rewarding journey through the history of glass from its discovery in ancient times, the film turns into a plant tour of the Corning Glass Works, where both mass-production methods and centuries-old handicrafts are combined. The products of recent glass research are paraded across the screen: photosensitive glass, highly heat-resistant glass, unbreakable dishes, and products for industry.

A sparkling script has been expertly translated into dexterous camera-work by Paul Hance Productions, Inc. The scenes of the automatic production of lamp bulbs are among the most effective in any business film. The delicate bulbs tumble from a rotating table like giddy children leaving a merry-go-round.

Since the commercial message is certainly subdued, the film should find quick acceptance among the millions of viewers on the 16-mm. circuits. Corning's previous film, *The Glass Center of Corning*, has been shown about 5,000 times on non-theatrical screens (schools, industrial plants, clubs, churches, and so on) and has reached about 20 million on TV.

The film, which can be borrowed free from Association Films, 247 Madison Avenue, New York 16, N.Y., would be a valuable addition to a plant film program for its delightful depiction of an important segment of industry. Companies considering a film to tell their stories will value both this film and the Walworth one (see below) as vivid examples of what can be achieved.

*How to Sell Quality* (26 minutes, b&w) was made for those sales executives whose prices are under assault both from competitors and their own salesmen. This sales training picture is particularly pertinent during the present period of vigorous competition, when many buyers insist on price concessions.

It tells the tale of an unsuccessful salesman who is about to quit since he thinks that his company's prices make him helpless against his competition. However, by observing four successful salesmen—a milkman, an insurance salesman, a wholesaler's representative, and an industrial salesman—our hero realizes that there is a formula for successfully selling quality products against severe competition.

The film pin-points the time-tested techniques for making the customer prefer the more expensive product. Based on the best-selling booklet of the same name by J. C. Aspley, the film was produced by Jam Handy for the Dartnell Corporation, 4660 Ravenswood Avenue, Chicago 40,

## How many of these everyday problems can MOVIES solve for YOU?

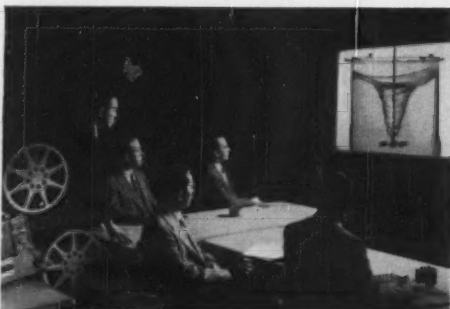
### SELLING

*Minute Maid Corporation* has a double selling job. They have to compete for grocery-store freezer space as well as build consumer demand. Movies have helped them do both. One type of film merchandises the Minute Maid promotion program to store buyers, while another tells Minute Maid's frozen-product quality story to consumer groups.



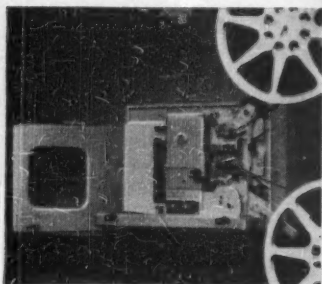
### DEMONSTRATING

*Mixing Equipment Company* makes heavy, specialized Lightnin Mixers that do specific industrial fluid-mixing jobs. Demonstrating the engineering principles involved is a prerequisite to selling the equipment. But how can you demonstrate a ton-plus machine in hundreds of engineers' offices? Mixing Equipment Co. does it with movies!



### TRAINING

*B. F. Goodrich* snips off production waste at its base—with movies. Films of plant operations teach foremen the principles of motion study in a work-simplification course. With this knowledge, the foremen are eliminating thousands of dollars' worth of lost time and waste motion in their departments.



### FOR SUCCESSFUL SHOWINGS

Good presentation plays an important part in the success of business movies. That is why so many progressive companies, like the ones mentioned here, use Kodascope Pageant 16mm. Sound Projectors... to assure crisp, brilliant pictures and adequate, easy-on-the-ear sound that is unmarred by show-stealing projector noise.

Salesmen on the road appreciate Pageants, too, because their permanent lubrication means long, maintenance-free service, even when they are in continuous use. They also like the Pageant's neat portability and easy operation.

For details about Pageant Projectors, just check the coupon for your free copy of a new color catalog on the complete Pageant line.

### TO HELP YOU GET STARTED...

This free booklet, "Motion Pictures: Aids in Business and Education," can help you decide how 16mm. movies can help you. Discusses applications, planning, production costs, presentation, and effectiveness of business and industrial movies. References and sources of loan films included. Just mail the coupon.



### EASTMAN KODAK COMPANY

Dept. 8-V, Rochester 4, N. Y.

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Please send me without cost or obligation:

- ☐ "Motion Pictures: Aids in Business and Education"
- ☐ New color catalog on Kodascope Pageant 16mm. Sound Projectors

NAME \_\_\_\_\_

POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_

(Zone)

STATE \_\_\_\_\_

**Kodak**  
TRADE MARK

Ill. It can be rented for \$1 per showing (with a minimum of \$40) from Dartnell or from The Donnelly Institute, 509 Fifth Avenue, New York 17, N.Y.

**Hooray for Homer** (12 minutes, color) which was made by the Baltimore & Ohio Railroad as part of its safety program demonstrates that business films are one of the most creative segments of the entire motion picture industry. Since business films can be tailored to particular tastes, they frequently escape the dilution that affects motion pictures aimed at mass markets.

As the film is for children, slickness and excessive detail were avoided. Primitive drawings done in a childlike scrawl were colored with simple crayons rather than the usual paints. The film technique is new although not unique. A semblance of motion was obtained in this film, which cost about one-fourth of the usual price of an animated cartoon, by moving the camera over a few dozen large drawings on which separate cut-outs of characters were placed. It tells the simple story of a boy who rescues other children from a refrigerated freight car.

This is the third film in the B&O safety program which has been credited with reducing juvenile trespassing on the B&O tracks by 75 per cent during the past few years—thus decreasing the danger to children as well as to passengers from flying objects and from obstacles placed on the tracks. The films are shown by uniformed railroad patrolmen to about one million children each year along the right-of-way. It was produced by UPA in co-operation with Stephen Fitzgerald & Associates.

**Farm Family American** (27 minutes, color) poses and answers the question: how're you going to keep them down on the farm (old-style) after they've seen mechanization? Made by General Electric to expand the farm market for electrical products (not G-E products, but rather electrical farm equipment in general for which GE supplies components), the film is a rather melodramatic story of the crisis in a family. The plot concerns the conflict caused by the determination of grown children to convince their parents of the value of farm mech-



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Model A 302

Replaces blackboard. Use large, clean paper pads—which we stock. This versatile all aluminum easel is also equipped for showing turn-over charts or cardboard charts of almost any size. Rugged yet light in weight. Folds like magic for easy carrying or storage. Thousands in use by big industry everywhere.

Visualize your ideas for better understanding

Model A302 shown above \$46.50

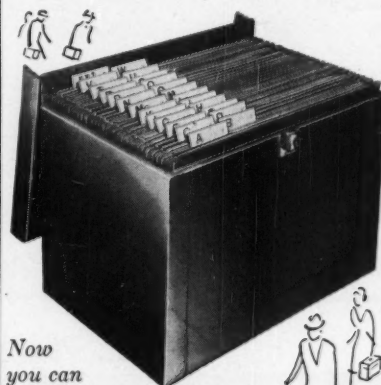
Other models available. Write for free literature.

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you can

TAKE IT WITH YOU —  
Oxford  
"Carry File" with  
PENDAFLEX®  
HANGING FOLDERS

EXECUTIVES: Your stylish "traveling office", for reports, letters, minutes.

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HOME "MANAGERS": Perfect for household papers—bills, budget, taxes, insurance. Made of lightweight steel, tan finish. Brass lock, leather handle, piano-hinge. Holds 25 Pendaflex celluloid-tab hanging folders, which can't slump or sag. Clip for free catalog, name of dealer.

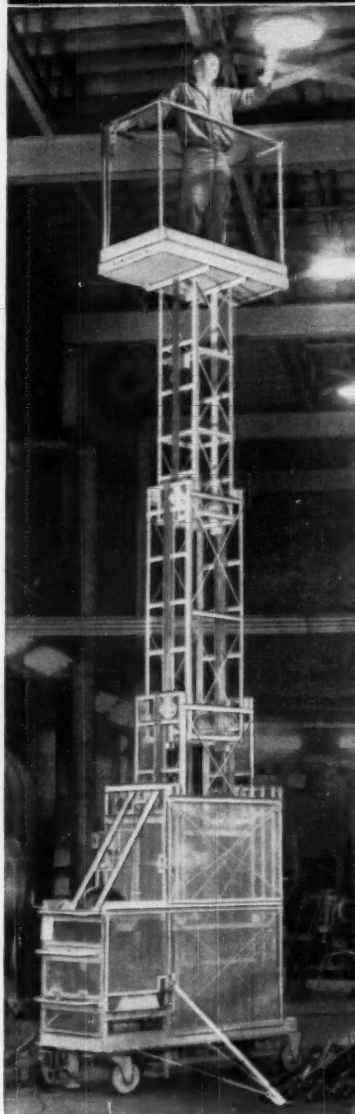
Oxford Filing Supply Co., Inc.  
30 Clinton Road Garden City, N.Y.



THE MAN WHO FEELS SAFE  
WORKS BETTER

## Economy HI-REACH TELESCOPER

ENGINEERED FOR STRENGTH  
STABILITY AND SAFETY



Safety is our first consideration in building Hi-Reach Telescopes.

During the past quarter of a century of making Hi-Reach Platform Telescopes, our engineers have constantly improved the mechanical construction to obtain maximum stability, smooth time-saving lifting action, and safety.

Standard Models available from 10'-9" to 35 ft. high, and custom-built units as high as 100 ft. if you like.

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**ECONOMY ENGINEERING CO.**  
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Name \_\_\_\_\_

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

anization, an argument which city-dwellers assumed was largely settled.

Since many other companies aiming at this same market—GE calls them its natural sales allies—could profit by showing this to farm audiences, GE has kits available to aid companies in showing the film. As with many companies which have had considerable experience with films, GE uses them as part of a program for a defined purpose. This is one of 21 motion pictures which are part of the More Power To America program, which was started at the end of World War II to speed the electrification of industry, homes, and farms. The goals of so many kilowatt-hours per man-hour in industry were not only attained but were actually surpassed.

The GE sales allies—utilities, machinery makers, contractors, trade associations, distributors, and so on—spent almost a half million dollars for copies of the previous G-E films to help boost their own markets. Produced by Jack Glenn Productions of New York, the film is available free from Association Films, 347 Madison Avenue, New York 17, N.Y. Previous films in the series which treated many subjects including atomic power, materials handling, and welding can be borrowed free from GE, Apparatus Sales Division, Sec. C684-2, Schenectady 5, N.Y.

**Back of the Name** (21 minutes, color) was made by the Walworth Company as a mood picture. This selling tool is to be used by Wal-



CREATING A MOOD

worth representatives in their talks before engineering groups, jobbers, prospects, and others. Since the company makes almost 50,000 varieties of valves and related items for an entire spectrum of industries, a film which would create a mood

## POSITIVE RIGIDITY

... recommended  
for all office  
machines ...  
ESSENTIAL  
for  
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**Cramer**  
**GUARDIAN**



IN  
4 SIZES



28" height:  
24x30" top.



38" height:  
28x17" top.



38" height:  
24x28" top.



38" height:  
28x17" top.



38" height:  
28x17" top.



WELD-BRACED  
TOPS & LEGS  
STAY RIGID



NEW LEAF LOCK  
CANNOT RELEASE  
ACCIDENTALLY



LEVELING DEVICES  
ASSURE STABILITY  
ON ANY SURFACE

### OFFICE MACHINE TABLE-STANDS

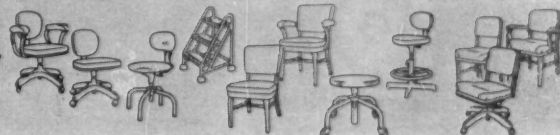
Engineered to the rigid requirements of today's complex office machines, these new Guardian table stands by Cramer of Kansas City safeguard your investment in costly machines by holding them rigidly in place for accurate and trouble-free operation. Famous Cramer anchor-cups on each leg grip floor securely, and a handy lever releases the silent retractable casters for easy rolling of stand and machine when desired. Quality-constructed of square-tube steel with smooth tops of 3/4" plywood ... designed to complement the decor of the modern office.

Made by the Makers of Cramer Posture Chairs

Ask your Cramer dealer  
write Dept. DR

CRAMER POSTURE CHAIR CO. INC., 1205 Charlotte, Kansas City 5, Mo.

ALL MADE BY  
**Cramer**  
OF  
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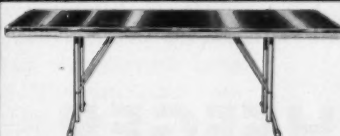
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Distribution and Materials  
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CONTROL, MOVEMENT and STORAGE  
OF MATERIALS

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If you are on the board of your school or church, or on the house or purchasing committee of your club or lodge, you will be interested in this modern, Folding Pedestal Banquet Table. Write for catalog & special discounts.

MONROE CO. 40 CHURCH ST. COLFAX IOWA



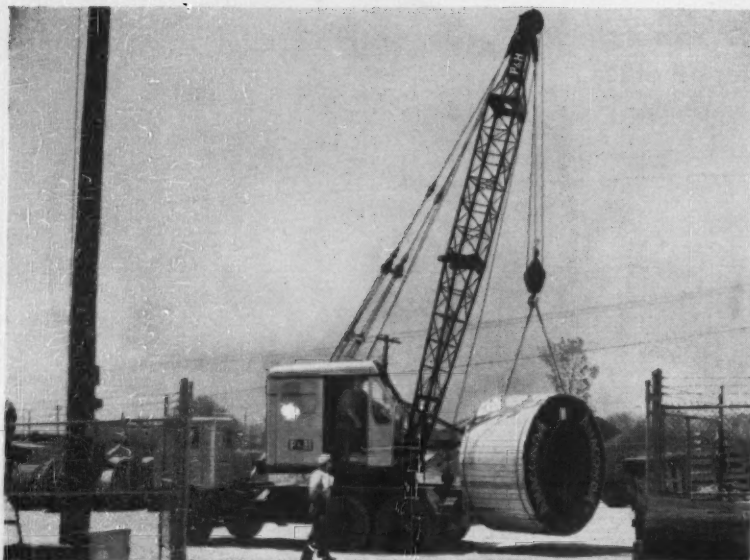
**DOLLY  
GOT  
A  
LITTLE  
LOADED...**

Materials handling  
equipment carrying  
much too much?

Then you're losing money. Fight materials handling obsolescence in your plant. See hundreds of new developments in equipment, machines, supplies and services exhibited by the industry's pacesetter manufacturers. Write for free tickets: Clapp & Poliak, Inc., 341 Madison Avenue, N. Y. 17.

**6th National  
Materials Handling  
Exposition**

International Amphitheatre, Chicago  
May 16-20, 1955



**Put P&H to work in your yard!**



## Start Cutting Costs NOW with Modern Truck and Crawler Cranes!

Whether it's bulk materials or complete assemblies — whatever size your loads may be — P&H offers the right machine from the world's most complete line of Power Cranes.

These modern features mean money in your pocket: welded steel construction — smooth hydraulic control for accurate handling — smooth travel — easy maneuvering. And above all, here's the famous P&H stability that lets you put "more on the hook."

P&H, world's largest builder of "thru-the-air" materials-handling equipment, is ready to advise you on the most modern, low-cost methods of handling materials around your plant — inside or out. See your P&H Power Crane and Shovel dealer or write for literature. P&H Power Crane and Shovel Division, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

# HARNISCHFEGER

about the entire Walworth operation rather than a nuts-and-bolts picture about one product was chosen.

As frequently happens with films, other uses have been discovered for the picture. It has been adopted for vestibule training for new employees and was helpful in familiarizing the staff of Walworth's ad agency with the company's operations.

This decidedly above-average, plant-tour film demonstrates that creativity is essential to lift an unexciting subject up to the level of attention. Illustrated in this new film are the latest cost-cutting techniques in factory operations, including shell-molding and the push-button foundry. A showing can be arranged by contacting the Walworth Company, 60 East 42nd Street, New York 17, N.Y., or any local Walworth office in 20 other cities. Unifilms, Inc. of New York was the producer.

*Land of Promise* (28 minutes, color) describes the impact of the St. Lawrence Seaway on northeast Ohio and invites manufacturers to locate plants in that area. By pointing out pictorially the dollars-and-cents arguments for this area, the Cleveland Electric Illuminating Company expects to attract new industries and thereby broaden its own market.

This is the first film to consider the effects of the St. Lawrence Seaway, which is scheduled for completion in 1959, on American industry. It can be borrowed free from R. L. DeChant, Manager, Development Dept., The Cleveland Electric Illuminating Company, 85 Public Square, Cleveland, Ohio.

## Free Catalog

The recently revised catalog issued by The United States Steel Company describes eighteen motion pictures which can be borrowed free for in-plant showings, employee information programs, club or association meetings, or any other program. Ranging from 11 to 38 minutes in length, these films offer a long look at the nation's basic industry. A copy may be had free from R. W. Roth, Distribution Supervisor, Motion Picture and Visual Aids Section, U. S. Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

## PERSONNEL HANDBOOK

• Complete standard guide to all aspects of personnel and industrial relations. 19 information-packed sections explain successful practice, rules, techniques. How to secure and maintain an adequate staff; avoid labor friction; reduce turnover; make best use of employee skills and experience. 65 Contributors. 262 forms, illus., 1167 pp. \$10

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..YOUR MAIL!



Mail bags control and safeguard receipt and delivery of mail. Used by important firms everywhere. Last for years.

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### CUT MAIL HANDLING COSTS!

Lightweight, spring steel rack holds mail bag open wide. Heavy bags easily moved on rack with wheels.

D400 Rack.... \$ 7.50

With Wheels .. 10.00

D300 Heavy Canvas

Bag 24" x 40"—

Stenciled With Your

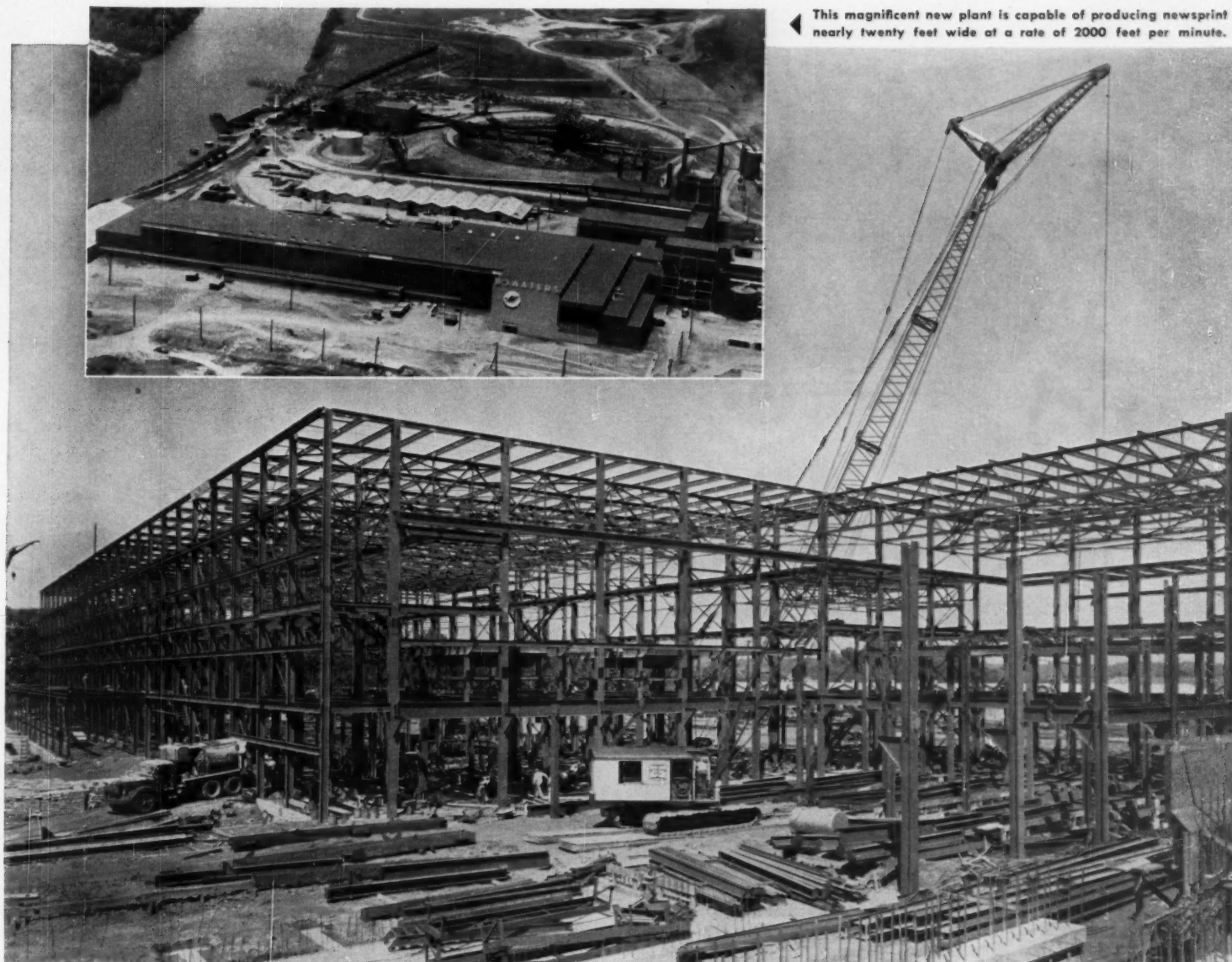
Name ..... 6.00

If your dealer cannot supply you, order direct on trial. Satisfaction guaranteed!



**CAN-PRO CORPORATION**  
DEPT. D • FOND DU LAC, WISCONSIN





◀ This magnificent new plant is capable of producing newsprint nearly twenty feet wide at a rate of 2000 feet per minute.

Main building shown at the completion of steelwork. Engineer for the project was J. E. Serrine Co., Greenville, S. C., aided by Celli-Flynn of McKeesport, Pa., consulting architects. Construction was a joint venture of Turner Construction Co. and Fraser, Brace & Co.

## Titan in Tennessee

The giant mill shown above is Bowaters Southern Paper Corporation's newsprint plant on the Hiwassee River at Calhoun, about 40 miles northeast of Chattanooga. Put into operation in mid-1954, the plant was designed to produce 130,000 tons of newsprint and 55,000 tons of kraft pulp per year, making it the South's largest newsprint mill.

Dominating the plant is the huge main building. Over 1000 feet long and covering 5½ acres, it includes a pulp-drying and machine room, a storage-and-shipping bay, a bleaching plant, a stock-preparation room, a grinder room, and shop and stores facilities. Nearby stands the power house which contains four boilers and two 10,000-kw turbo-

generators. The third structure serves as a pumping station and filtration plant.

### Steelwork Erected Fast with High-Strength Bolts

These three buildings required over 7500 tons of structural steel, fabricated by Bethlehem at our shops in Rankin and Leetsdale, both in western Pennsylvania.

Shop connections were riveted. However, all field joints were bolted. Out of the 196,635 bolts used, 170,203 were high-strength bolts meeting ASTM A-325. The remainder consisted of common machine bolts.

High-strength structural bolting, a technique pioneered by Bethlehem, assured tighter joints than field-driven rivets. In addition, fewer men and less equipment were required, and the job was materially speeded. Thanks to bolting, and to meticulous job planning, Bethlehem crews completed erection of this large project in only 20 weeks.

**BETHLEHEM STEEL COMPANY**  
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*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributors: Bethlehem Steel Export Corporation*

# BETHLEHEM STEEL





## One measly carbon!

*"Price changes effective next Monday—and I get one measly copy! Now my two girls have to drop everything, and type new price lists and letters to the men in the territory...The home office could spare the branches a lot of grief by just sending enough copies..."*

### Not enough copies...

loses time, delays action, lowers efficiency in every business...is a chronic problem which Ozalid can usually solve.

Anything written or typed, printed or drawn on translucent (lets light through) paper can be copied on an Ozalid machine, in less than a minute. The copy is accurate, clear, dry and ready for use.

A letter size copy costs less than 2¢—a lot less than retyping and proofreading, transcribing, photocopying. And anybody can use an Ozalid machine.

### Saves every department...

Thousands of companies now use Ozalid copies of orders, invoices, material lists,

statements, bulletins, tax returns, charts and drawings—to speed production, order filling, accounting, billing, shipping, etc.

Add new entries on cumulative reports, and Ozalid copies save transcribing and typing. Files can be reduced; one carbon makes Ozalid copies anytime.

Even in a small office, an Ozalid machine soon pays for itself. Call the nearest Ozalid distributor (*see phone book*) and ask for a demonstration. Or write to 48 Ozaway, Johnson City, N. Y. In Canada, Hughes Owens Company, Ltd., Montreal.

OZALID—A Division of General Aniline & Film Corporation...*From Research to Reality*

# OZALID



OZAMATIC (left) is a table model, handles sheets as wide as 16", and can make up to 1000 prints an hour.

BAMBINO (right) is the smallest, fastest, low-priced office copying machine; will make 200 copies an hour, on sheets as wide as 9", for less than 2¢ a copy.





**NEW METHODS  
AND MATERIALS**

# WHAT IS HAPPENING *at industry's frontier*

***New materials, products,  
new ways to make them***

A flat, transparent television picture "tube" . . . a machine that makes transistors automatically . . . a new, weather-resistant transparent thermoplastic and a phenolic plastic that holds its strength at temperatures to 500° fahrenheit . . . new equipment for abrasion testing and methods research . . . new radiation sources and nuclear reactors . . .

All these are in to-day's research lab and pilot plant developments that promise to improve to-morrow's products.

**The flat TV tube**, developed by Willys Motors, Inc., substitutes a three-inch glass "sandwich" (photographs, right) for the usual bulky cathode ray tube. The "meat" in this sandwich is a phosphor. An electron beam activates it and produces the desired image. Willys emphasizes that the screen is still experimental. But this development, following close on the heels of other advances in phosphor technology reported by GE, RCA, and Westinghouse, does promise vastly improved TV equipment for industrial, military, and consumer use.

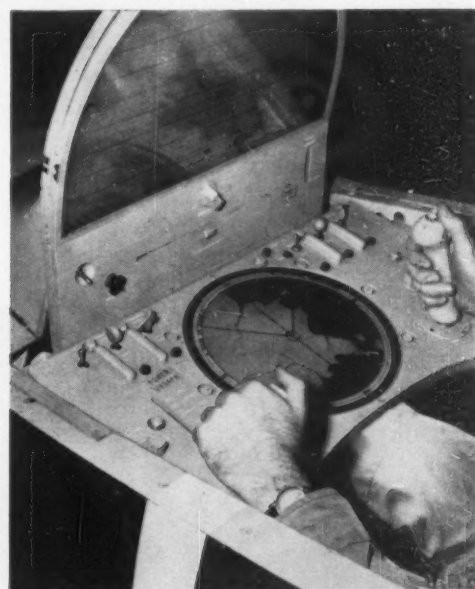
**A potential bottleneck** in electronics production is on its way to solution at Bell Telephone Laboratories where *Mr. Meticulous* (photograph, right) is turning out transistors with amazing speed and accuracy.

Transistor fabrication is a difficult and exacting job. Reject rates have been high, and promised to go higher as new designs called for even tighter specifications. Now, if machines like *Mr. Meticulous* can be adapted for production-line use, and combined with automatic assembly units like the one pictured at the right, the electronic revolution (see March 1954, page 48) will really be on its way.

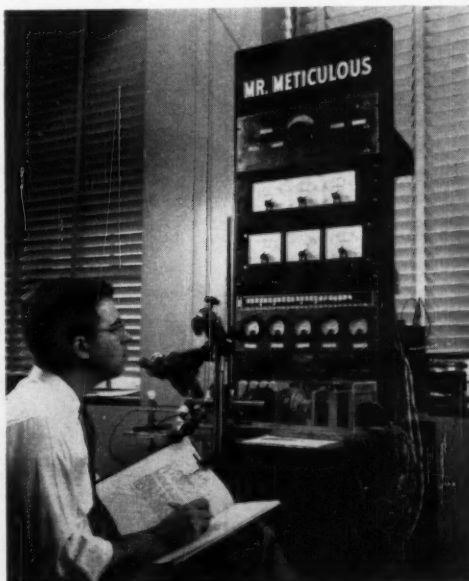
**Optical clarity, high strength**, weather resistance, and the ability to stand petroleum solvents and live steam . . . these are among the outstanding qualities claimed by General Ani-



Flat, transparent TV tube is only three inches thick, promises radically new designs to come.



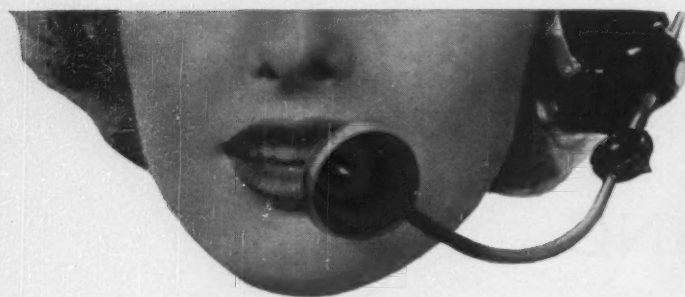
Navy hopes flat TV tube will make it possible to improve and simplify aircraft control panels.



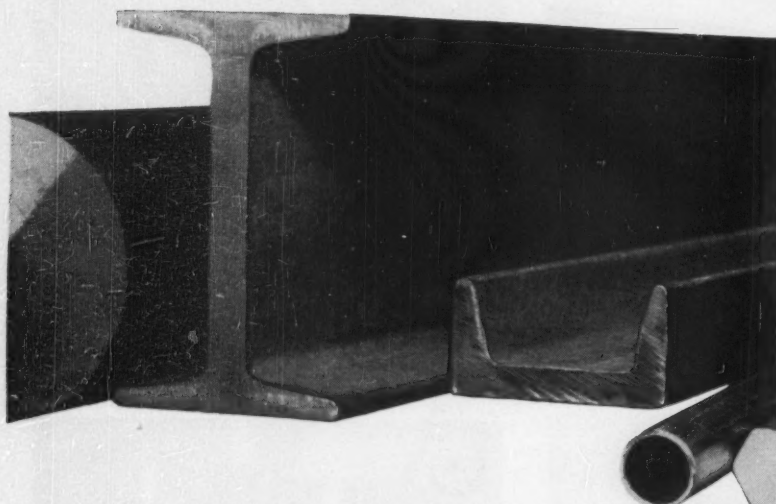
Automatic fabrication of transistors is achieved in this experimental unit at Bell Laboratories.



Production-line equipment for printed circuit assembly is now being made by General Mills.



# call Ryerson for steel carbon, alloy, stainless



## Quick delivery from world's largest stocks

Whether you need a single piece or a truckload you can depend on prompt, personal service from your nearby Ryerson plant. So, for every kind of steel—when you need it—call Ryerson.



## RYERSON STEEL

Principal products in stock: bars, structurals, plates, sheets, tubing, alloy & stainless steel, reinforcing, etc., also machinery & tools

JOSEPH T. RYERSON & SON, INC. PLANTS AT NEW YORK • PHILADELPHIA • CHARLOTTE, N. C. BOSTON • CINCINNATI • CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

line & Film Corporation for its new thermoplastic, *Gafite*.

A chlorinated acrylic polymer, *Gafite* is basically similar to the thermoplastics now used for aircraft glazing. But, according to GAF, chlorination almost doubles the tensile and flexural strength, adds a good 70 degrees (fahrenheit) to the heat resistance, and improves hardness and mar resistance.

*Gafite's* heat distortion temperature is reported to be above 270° fahrenheit. At room temperature, its tensile strength is 13,500 to 16,500 psi, and even at 230° it is 10,500.

First applications of *Gafite* are likely to be in the aircraft field, both because it appears to offer unusual advantages there and because its development price is high. (The first optical-grade cast sheet materials will have a price tag of \$20 a square foot.) However, it is expected that the price will come down and *Gafite* will move into such applications as transparent housings for steam valves (to permit inspection without disassembly) and a variety of optical parts. GAF also reports the material shows promise for use as an expanded plastic (see November 1953, page 54), and that the degree of expansion can be controlled over a wide range.

Much remains to be learned about handling *Gafite*, but it is a new engineering material that's worth investigating for jobs where optical clarity, break resistance, and heat resistance must go hand in hand.

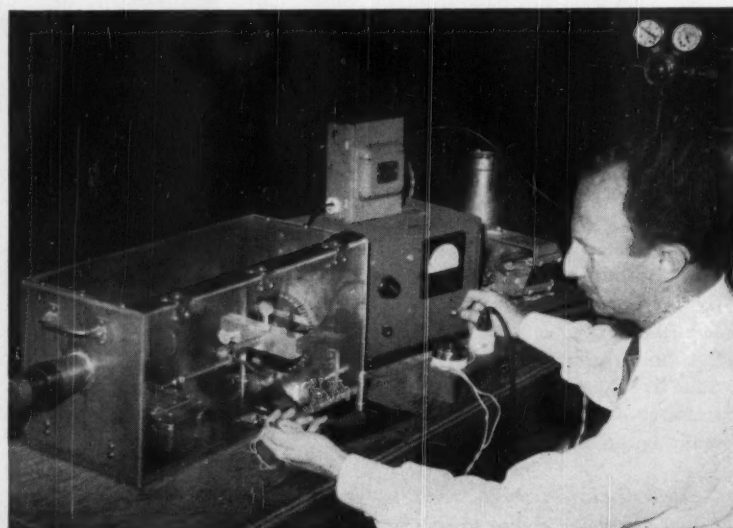
(For information on two more new plastics, see page 74.)

**New test equipment** is coming from a number of sources. In addition to Curtiss-Wright's new ultrasonic and beta ray devices (see page 74) and the new NBS jet abrasion tester for organic coatings (see below), there are two new abrasion testers: one, for porcelain enamel, was developed under the guidance of the Porcelain Enamel Institute, and is now being made by Keystone Electric. The other, for friction testing of materials like brake linings under load, is made by Link Engineering.

**Atomic radiation sources** for research on cold sterilization, vulcanization of rubber, and other processing techniques are now planned by several industrial groups. Radiocobalt "pipes" are being readied by Brookhaven National Laboratory for Esso Research & Engineering, Diamond Alkali, and Battelle Memorial Institute; and several other laboratories are using spent reactor fuel elements and reactor by-products.

Nuclear reactors (see February, page 39) are also being designed specifically for industrial research. Both Battelle and Armour Research Foundation have construction under way; and American Machine & Foundry Company has completed plans for "the first nuclear reactor to be owned and operated by private industry for research in industrial and humanitarian fields."

**Two natural materials** that have succumbed to the chemist's



Jet abrasion tester for organic coatings uses high-speed stream of abrasive powder to measure scuff resistance of protective coatings on a time-depth of penetration basis. National Bureau of Standards developed it.





This is the keyboard of the Burroughs Miracle Multiplier.

This single machine will compute and type invoices in less time than it takes to copy them alone with an ordinary billing type-writer. And no machine checking is required.

## The keys to a more efficient billing department

Here are the reasons why the Burroughs Miracle Multiplier is the world's fastest, most efficient billing machine



The Miracle Multiplier is easy to operate. It completes the entire billing operation with one step, by combining the usual steps of calculating and printing into one and eliminating the need for machine checking.

It computes and prints a complete invoice in one continuous operation.

The operator simply enters quantity and unit price. As these are printed, the total charge appears simultaneously—no need for checking the machine entries and calculations.

It computes by direct multiplication—not by repeated addition, as in ordinary calculating machines.

So don't wait any longer for a more efficient billing department. See the yellow pages of your telephone directory for the branch office near you, or write direct to Burroughs Corporation, Detroit 32, Michigan.

Burroughs is a trade-mark

**BURROUGHS** *MIRACLE* **MULTIPLIER**  
WORLD'S FASTEST BILLING MACHINE




**neenah says,**

People  who never

come into your  office,

never see  your face,

never clasp your  hand,

do  business with you

through  your letters.

so impersonal a bond requires the character  
of a fine rag bond by neenah.



Would you like business stationery that is preferred by your customers? Then ask your printer for a free copy of the "Neenah Guide to Preferred Letterheads." It is based on a four-year survey that determined what businessmen preferred in letterheads.



**NEENAH PAPER COMPANY • Neenah, Wisconsin**

skill are rubber and diamonds. Within the past few months, both have been duplicated in the laboratory—after years of effort.

While many types of synthetic rubber have been made, the natural rubber molecule has never actually been reproduced. Now, though, Goodrich-Gulf Chemicals, Inc., announces that it has turned the trick. Man-made "natural" rubber is a long way from large-scale production, but this development does promise that, if necessary, we could be less dependent on foreign supplies.

The man-made diamonds, too, are experimental—and very small. Still, General Electric's announcement that it has made diamonds in sizes (up to  $\frac{1}{16}$  inch long) suitable for industrial use, again means we could be more nearly self-sufficient in time of war.

**Rhenium**, a long-neglected metal, may soon be moving into commercial production. Battelle Memorial Institute reports it has electrical and electronic possibilities and may also prove useful in high-wear and high-temperature applications such as precision instrument points and thermocouple contacts.

Number 75 in the periodic table of elements, rhenium is a dense,

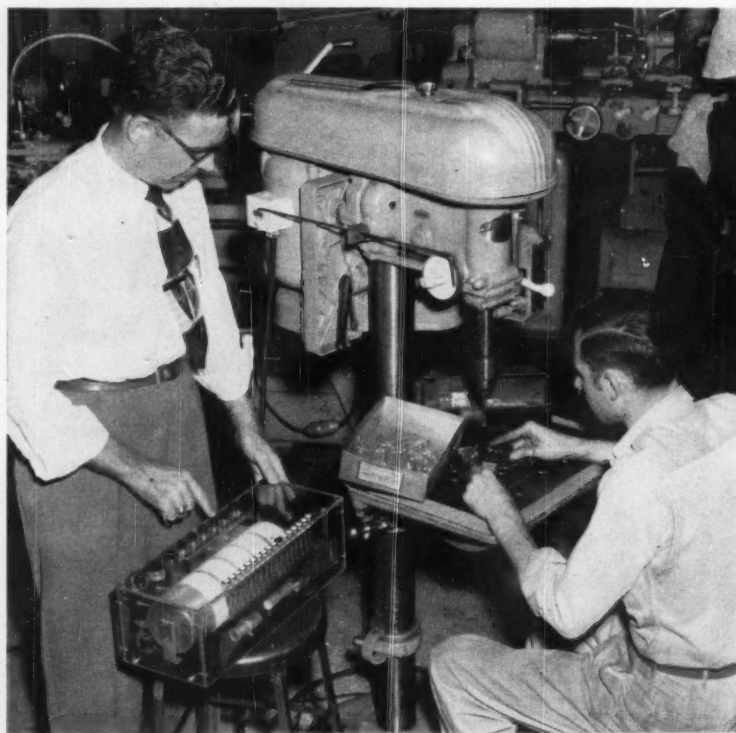
heavy metal with a melting point of 5,750° fahrenheit—almost as high as that of tungsten. Indeed, the two metals are similar in many ways, and rhenium is likely to find its first commercial application in vacuum-tube and lamp-bulb parts where tungsten is now used. Fabrication methods for the two metals are also similar. However, Battelle says, rhenium work hardens more than any other known pure metal, though it becomes quite soft and ductile when annealed.

Rhenium seems to be quite corrosion-resistant at room temperature, but it oxidizes rapidly at temperatures above 1,100° fahrenheit. However, when protected from oxidation, it retains its strength and other physical properties.

#### *File for reference*

The steady stream of new developments coming from industry's research labs makes it more important than ever to keep technical files up to date with the latest flow charts and descriptive literature, such as those listed below.

**Chemicals that can be made** from acrylonitrile and ortho-nitrochlorobenzene are outlined in king-



Methods research gets a boost from Georgia Institute of Technology. This *Auto-Graphic Time Study Machine*, devised by Dale Jones, associate professor of industrial engineering at GIT, permits an engineer to record job cycle times without diverting his eyes from the operation being studied.



sized (35 by 44 inch) wall charts prepared by Monsanto Chemical Company. The acrylonitrile chart may be obtained from Monsanto's Plastics Division, Springfield, Mass.; the ONCB chart from the Organic Chemicals Division, St. Louis 1, Mo. The Organic Chemicals Division also has an attractive 20-page booklet outlining properties and uses of maleic anhydride.

**Chemical production** and economics are charted in easy-to-follow form by Stanford Research Institute. Chemical product flow charts, originally prepared for the SRI *Chemical Economics Handbook*, have been assembled in booklet form, obtainable from SRI, Stanford, Calif., for \$5. It covers those organic and inorganic compounds which attained a production volume valued at \$5 million or more in 1953.

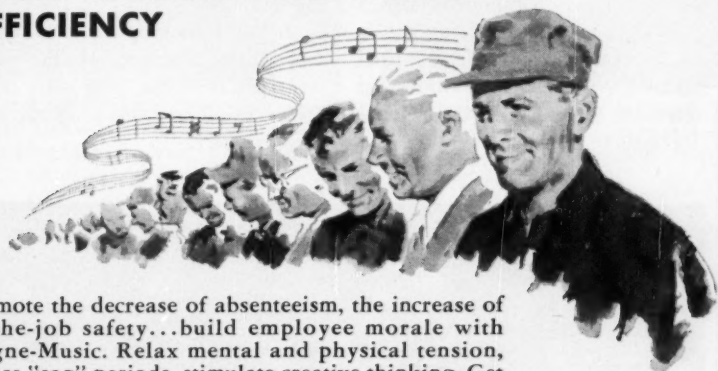
**Drug industry** technical and economic trends are discussed in a thirteen-page leaflet, offered free of charge by R. S. Aries & Associates, 270 Park Ave., New York 17, N. Y. The title is: *Economic Aspects of the Pharmaceutical Industry*.

**Metal fatigue** gets close attention in two recent publications: *Fatigue of Aluminum* by R. L. Templin is available from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., for \$1.50. The British report on the *Comet* jet airliner failures, in which metal fatigue played a major role. *Report of the Court of Inquiry into the Comet Accidents* (Civil Aircraft Publication 127), may be obtained from Sales Section, British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. Its price is \$1.80.

### Schedule changes

The Basic Materials Exposition (Design Engineering Show), originally scheduled for this May, will be held next year instead. Information on the show may be obtained from Clapp & Poliak, Inc., 341 Madison Avenue, New York 17, N. Y. The International Conference on Solar Energy, first planned for January, and then for February is now to be held in November. Stanford Research Institute, Palo Alto, Calif., is co-ordinating arrangements.

## Some facts about HIGH MORALE AND EMPLOYEE EFFICIENCY



Promote the decrease of absenteeism, the increase of on-the-job safety...build employee morale with Magne-Music. Relax mental and physical tension, reduce "sag" periods, stimulate creative thinking. Get better products and services from better, happier workers.

Put background music to work for you...today.

Now you can have on-location professionally packaged background music service by Magne-Music, a "product" of Magnecord and RCA, two of the greatest names in sound...and at a cost so low it will amaze you.

For facts about a new kind of background music service, especially tailored to meet your requirements, write Magnecord, Inc., 1101 S. Kilbourn Ave., Chicago 24, Illinois.



# How to **SAVE MONEY** and **TIME** where you'd least expect it



REVO-FILE gives girl finger-tip control over thousands of cards from sitting position. Records come to the clerk. Saves lost time, motion.

"Like getting 60 hours work in a 40-hour week," say office managers who've changed from old-fashioned card files to modern Revo-Files.

YOU MAY NOT have realized it, but old-fashioned drawer and tub files actually "rob" a firm of time and efficiency. They wear out clerks, cause tension, errors, lost motion. All of which raises your operating costs. A simple change to modern Revo-Files stops these losses. No costly transposition job is necessary. You

use the same cards you have now. But what a difference!

Each Revo-File brings thousands of cards under finger-tip control. Eliminates lost time, motion, energy. Clerks use it from an easy sitting position. It's compact. Mobile. Takes only a fraction of the space you're using, now. If you have 3,000 or more active cards, being used for continuous reference and posting, it will pay you to check on Revo-File, today. Mail coupon, now, for full details!

### Why Revo-File is the world's finest rotary file:

- Uses your present records. No costly changeover.
- Takes less floor space.
- Increases production.
- Reduces overhead.
- Cannot lose or damage records.
- Makes "in-out" filing faster.
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- Available in manual, automatic electric selection, and "high-boy" models. Accommodates all standard card sizes.

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Revo-File Division  
The Mosler Safe Company, Dep't DR-4320 Fifth Avenue, New York 1, N. Y.  
Please send me your free, illustrated folder giving details on Revo-File, world's finest rotary card file.

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FIRM NAME .....  
ADDRESS .....  
CITY ..... ZONE ..... STATE .....



**JUMP THE GAP**  
*between Idea and Action with an*  
**RCA SOUND SYSTEM**

For speed, intimacy, authority, there's nothing to compare with the spoken word. RCA Sound carries your voice to the remotest corners of the plant property . . . to specific locations or individuals, or every place at once. You get better coordination all around when verbal messages, radio programs and work-music are channeled over an RCA Sound System.

Installation is simple . . . and the cost is surprisingly low. Call in your local RCA Distributor and have him make an intelligent survey to determine what equipment is required to give top management and employees all the advantages of sound tailored to meet your plant's requirements now—and in the future.

RCA's new booklet, "Sound In Industry" will give you facts and figures on why dollar-wise companies place real importance on in-plant communications. The coupon on the opposite page will bring it free by return mail.



SOUND PRODUCTS

**RADIO CORPORATION  
of AMERICA**

ENGINEERING PRODUCTS DIVISION • CAMDEN, N.J.

In Canada: RCA VICTOR Company Limited, Montreal

## One company's new products

It looks like a trade show, but the display at the right is just part of Curtiss-Wright Corporation's exhibit of its new products for industrial use.

The result of a three-year diversification program, the new-product bonanza has something for almost every industry. It runs the gamut from lightweight expanded plastics to heavy-duty machinery. There are ultrasonic, dielectric, infra-red, electronic, and nuclear devices.

Among the ultrasonic units, for instance, in addition to those pictured below, are: an ultrasonic hops extractor for beer-making, said to be so efficient it reduces the amount of hops needed by as much as 50 per cent; an ultrasonic conche for homogenizing chocolate; and several kinds of laboratory and medical apparatus.

The atomic energy field is represented not only by the beta ray thickness gage pictured on the opposite page, but also by a combined scaler and ratemeter for use with Geiger-Muller tubes, proportional counters and scintillation counters in radioactive isotope studies; and two portable radiation detectors.

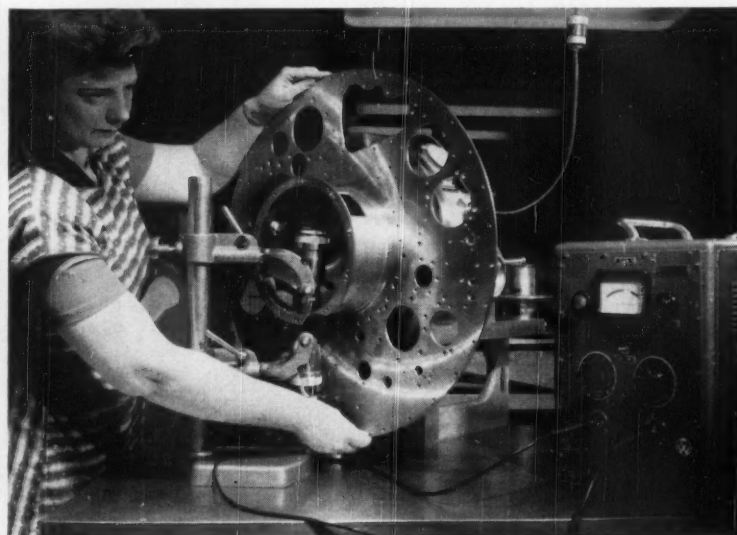
Production and safety get a boost from two kinds of visual units—a closed-circuit industrial television system that can be used for remote viewing of dangerous

plant operations, and a "black light" night viewer that shows up otherwise invisible objects at distances as great as two miles. It could be used to extend and reinforce plant security coverage.

There are two new plastics, the expanded isocyanate foam mentioned above, and a new heat-resistant phenolic. According to C-W, the phenolic holds its strength so well at elevated temperatures (glass fiber laminates made with it are said to have an ultimate tensile strength of more than 10,000 pounds psi even at 500° fahrenheit) that it may eventually prove useful for jet engine compressor blades and other rotating parts that require unusual heat resistance.

Where did all these new products come from? Some were developed here. Others—the ultrasonic units, for instance—represent European inventions to which C-W has acquired rights. Many of the units now offered for sale were made in Europe, but C-W is starting production here, and states clearly that all products are "backed by Curtiss-Wright engineers, installation, and service."

If you're looking for new equipment, or planning product line diversification for your own company, you'll find this program well worth study.



High-frequency sound waves are put to work in half-a-dozen different ways in new Curtiss-Wright products. Here, C-W Sonometer, ultrasonic flaw-detector, helps check aircraft part. It works on sound-transmission principle.





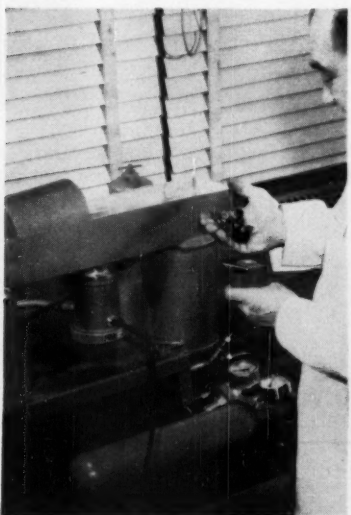
Carbides and chocolate, beer and metal products, all stand to benefit from the wide range of new products introduced by Curtiss-Wright at its recent one-company trade show. A section of the exhibit is pictured here.



Beta ray thickness gage is designed for automatic monitoring of sheet materials during processing.



Dielectric heater can be used to soften plastics for compression molding, speed production cycle.

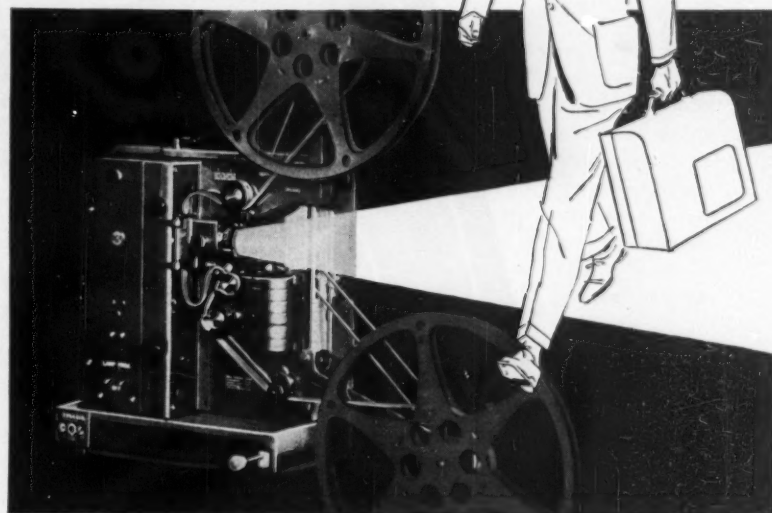


Parts-washer is another ultrasonic device. Sound-vibration unit is in cylinder mounted beneath trough.



Ultrasonic machine tool cuts carbides, ceramics, hardened steel. C-W calls this the *Diatron* drill.

## Number One Salesman Hits the Road



The light-weight with a punch! Unequalled in clarity of sound and brilliance of pictures—that's the new streamlined 1955 model of the famous

### RCA 400 PROJECTOR

A salesman can really go to town (country, too) with your sound film and *this* machine! Its evident simplicity, its dependability and the famous Thread-Easy film path enable novices to get a real show going in short order—every time . . . Sharp brilliant pictures; crisp, clear sound. The RCA 400's mechanism and sound system (optical or magnetic) require no pampering, no mechanical skill for perfect results. Your RCA Audio-Visual Dealer will gladly demonstrate why even inexperienced operators have complete confidence in the RCA 400. The coupon will bring you particulars. Why not get it off today?



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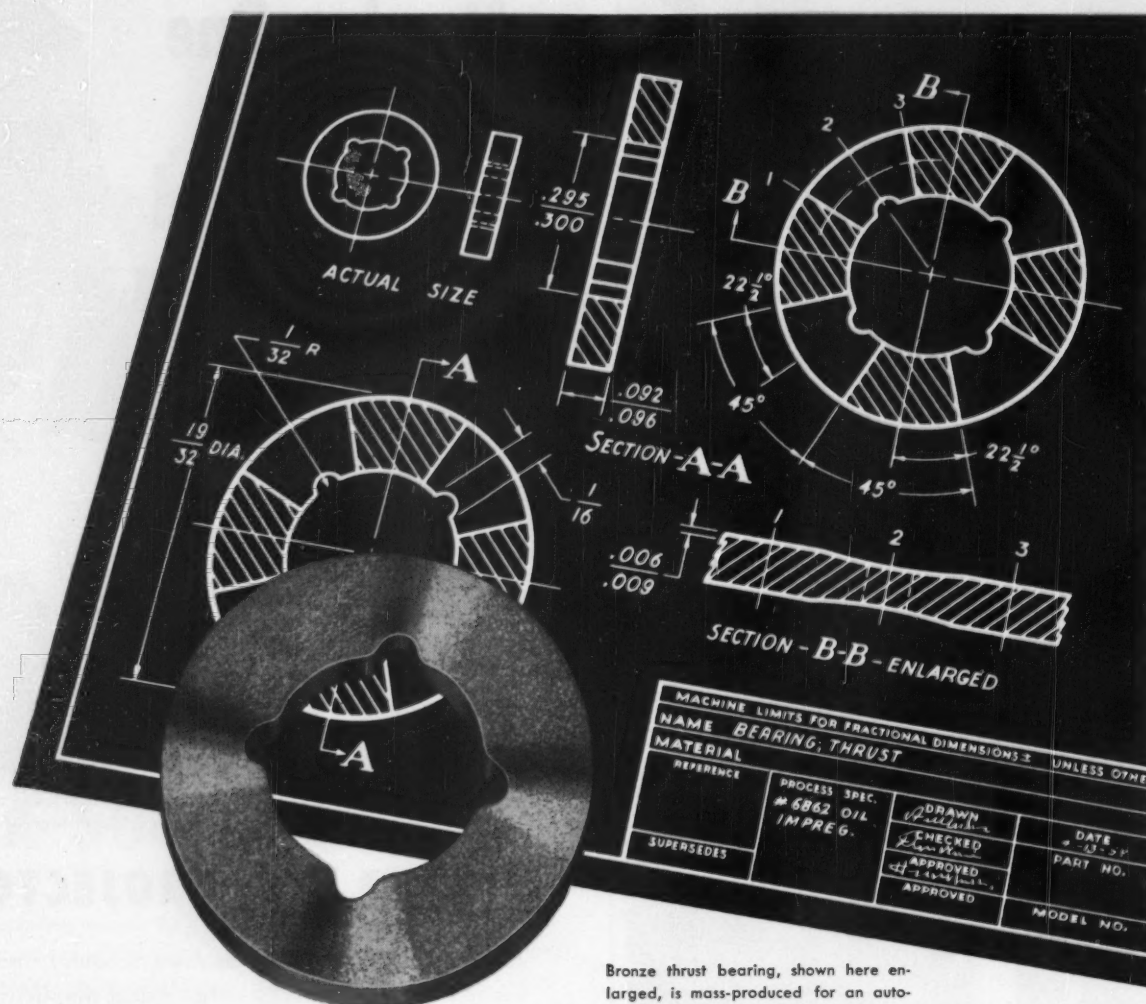
Please send latest material on complete line of RCA 400 PROJECTORS.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

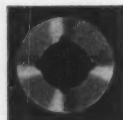
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



Bronze thrust bearing, shown here enlarged, is mass-produced for an automotive distributor application.

## MORAINE'S EXPERIENCE WITH METAL POWDER HELPS MANY MANUFACTURERS

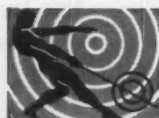


Whether it's this small thrust bearing or a large, highly complex part, the odds are that it can be produced at lower cost by the Moraine metal powder process when it is to be produced in quantity.

Each week sees new proof of what can be accomplished by cooperative effort between customers and Moraine. Simplified

production, improved performance and reduced cost are three of the results that now benefit many different industries.

In powder metallurgy, Moraine has unequalled experience. Facilities are unequalled. Whether in production or in planning, the Moraine metal powder process may be able to help you make your product better, at lower cost.



**moraine products**

DIVISION OF GENERAL MOTORS, DAYTON, OHIO

**METAL POWDER PARTS**



## IF "YOU" WERE THE BOSS—

### Contest shows up gaps in the public's economic savvy

The general public's grasp of production problems is pretty good, a Marquette University study of answers to a "You Be the Boss" contest shows. But there are gaps in the public understanding of sales and financial problems. Even management men showed up poorly in responses to a problem in sales promotion.

The study, by Charles J. Tobin, director of Marquette's Bureau of Business and Economic Research, and Assistant Professor Norman J. Kaye, is based on analysis of 1,000 of the 9,000 entries in the "You Be the Boss" contest conducted by the Wisconsin Manufacturers Asso-

ciation at the Wisconsin State Fair in 1953. (See DUN'S REVIEW AND MODERN INDUSTRY, October 1953.)

Competing for \$20,000 in prizes, the contestants were asked to indicate which of a number of given solutions they would advise to meet stated problems of an imaginary business concern. The 9,000 participants included owners, managers, employees, housewives, students, and rural residents.

On the seven questions to which there were right and wrong answers given, an average of 63.5 per cent of the 1,000 sampled contestants chose "right" answers, only 6.5 per cent chose "wrong" ones.

Managerial respondents had the best record, employees and the self-employed next best, and housewives the lowest.

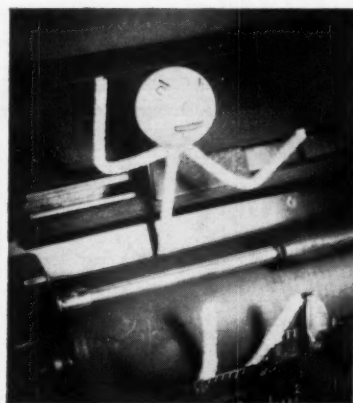
A few "wrong" answers were given more frequently than others. One concerned a company faced with a demand for a 10 per cent wage increase. Many contestants advised granting the raise even though no funds were stated to be available for that purpose. Housewives went astray on this response most often. Management and other people advised explanation of the situation to employees, joint efforts to reduce costs so raises might become possible, and similar solutions.

One question on which management people did as badly as everyone else concerned what a company should do when its whole industry faced a falling off in sales. Retrench on sales effort, said a substantial percentage of managerial contestants as well as others.

A goodly number of management people also

### Eye-Bait for Safety Figures

Novelty rates high in presenting perennial subjects like safety. Dow Chemical Company achieved it with pipe cleaners, table tennis balls.



Getting caught in machinery injured four in one year, Dow tells staff.



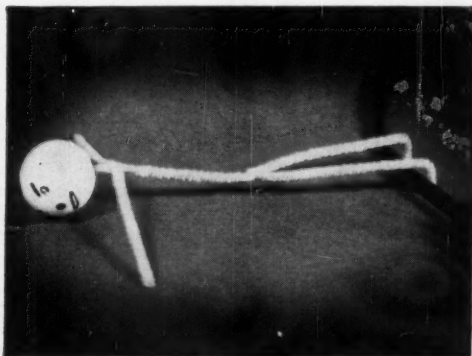
Trying to use wrong tool made one lose time, *The Dow Texan* reports.



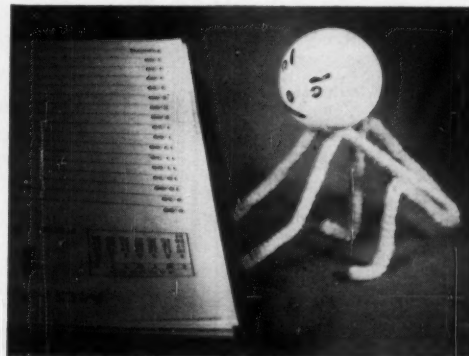
Chemicals cost eight lost time. Figures are from Dow's Texas Division.



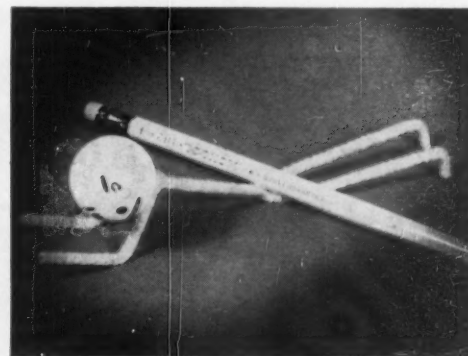
Thermal burns from flame, other high heat, knocked nine off the job.



An unlucky thirteen fell onto the accident roll.



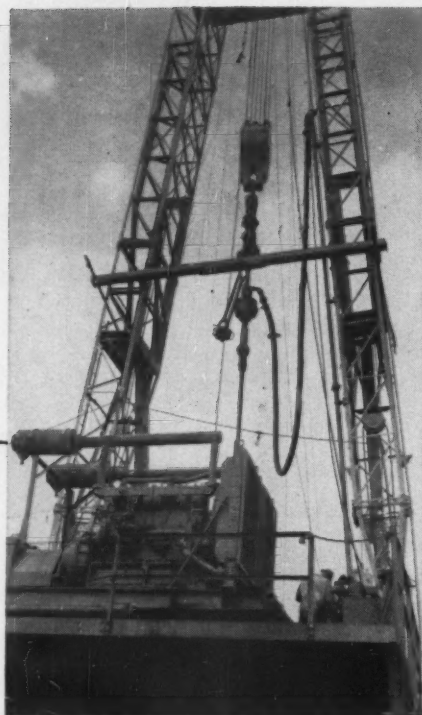
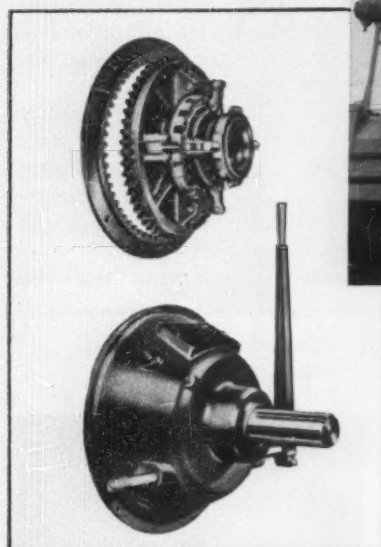
Handling things wrong cost nine men lost time.



Falling objects hurt seven, says little character.

for oil field  
applications...

## A POWER TAKE-OFF that can TAKE IT



...thanks to  
**BORG-WARNER**  
*Engineering*

Power take-offs take a terrific beating in the oil fields. The shock loads of constant starting and stopping . . . and the punishing pounding of drilling and pumping rigs . . . could lead to frequent, time-consuming adjustment or costly breakdown.

To minimize these risks, Borg-Warner's Rockford Clutch Division engineered a power take-off especially suited for oil field use. With its heavy duty gear-tooth drive clutch, unusual ease of adjustment, and husky construction throughout, this B-W Rockford power take-off delivers remarkably trouble-free performance in drilling, pumping and pipe-line applications.

Available on 19 out of 24 makes of oil field engines, the Rockford power take-off exemplifies Borg-Warner's "design it better—make it better" tradition. It is another typical example of how Borg-Warner serves American industry, every day.

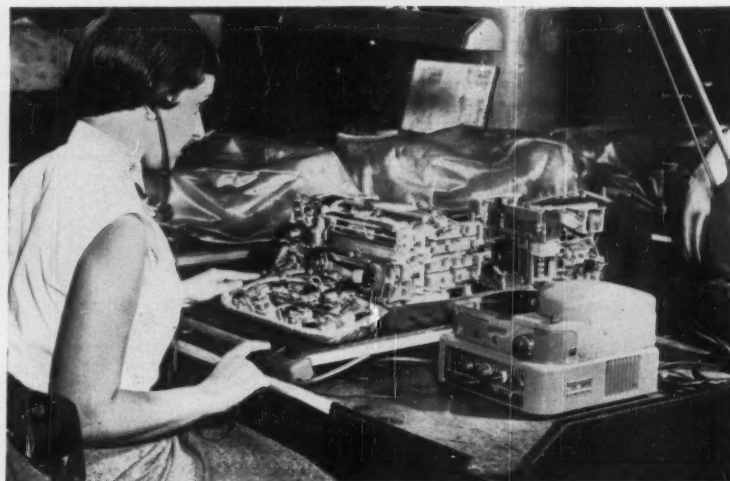
**B-W ENGINEERING MAKES IT WORK B-W PRODUCTION MAKES IT AVAILABLE**

Almost every American benefits every day from the 185 products made by

# **BORG-WARNER**



THESE UNITS FORM BORG-WARNER, Executive Offices, Chicago: ATKINS SAW • BORG & BECK BORG-WARNER INTERNATIONAL • BORG-WARNER, LTD. • BORG-WARNER SERVICE PARTS CALUMET STEEL • DETROIT GEAR • FRANKLIN STEEL • HYDRALINE PRODUCTS • INGERSOLL CONDITIONED AIR • INGERSOLL KALAMAZOO • INGERSOLL PRODUCTS • INGERSOLL STEEL • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARBON CHEMICAL • MARVEL-SCHLEIER PRODUCTS • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN OF CANADA, LTD. NORGE • PESCO PRODUCTS • REFLECTAL CORP. • ROCKFORD CLUTCH • SPRING DIVISION WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD. • WAUSAU • WESTON HYDRAULICS, LTD. • WOOSTER DIVISION



### *Training via recordings*

To speed training, create uniformity in testing, and free experienced inspectors from training tasks, The Gray Manufacturing Company, Hartford, Conn.,

uses a recording on its own Audograph to tell inspector-trainees how to do the job. She can slow the recording, stop it, have instruction repeated.

suggested paying higher stock dividends when taxes became too high for profitable operation—thereby indicating they thought paying dividends would duck taxation.

What to do about high costs of accidents tripped a large number of contestants, also, but not management men.

As to what profit should be, per

dollar of sales (for which the analysts had no right or wrong answer), contestants varied so widely it was impossible to define a predominant viewpoint.

Tobin and Kaye see the results as valuable pointers on what kind of economic education is needed and to which groups in the populace it should be directed. They

## **MARSH & McLENNAN**

INCORPORATED

### *Insurance Brokers*

CONSULTING ACTUARIES  
AVERAGE ADJUSTERS

Chicago New York San Francisco Minneapolis Detroit Boston Los Angeles  
Toronto Pittsburgh Seattle Vancouver St. Louis Indianapolis Montreal  
St. Paul Duluth Portland Buffalo Atlanta Calgary Washington  
Tulsa New Orleans Phoenix Milwaukee Cleveland Havana London



suggest a national business organization attempt a similar sampling of public economic opinion on a wider scale.

The questionnaire for the contest was devised by three Wisconsin chapters of the Society for Advancement of Management, which sponsored the contest at the Wisconsin Manufacturing Association's request. "Right," "wrong," and "indifferent" answers were determined, however, by three Chicagoans, two from industry and a professor.

The large amount of tabulation required to analyze the results was the "volunteered" labor of pledges to Delta Chapter of Delta Sigma Pi fraternity during Marquette's "hell week," when physical hazing is banned.

#### Automation—for employees

Whether automation develops rapidly enough to cause temporary technological unemployment or not, discussion of the possibility is arousing employee interest and concern. Witness the use the unions are making of automation as an

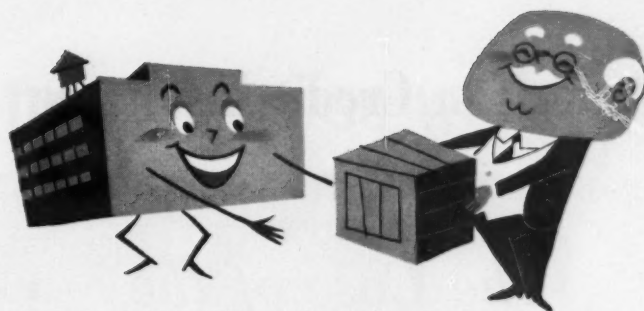
argument for guaranteed wages and employment.

While employer organizations have attempted to minimize the concern in public statements, Enterprise Publications, 11 North Wacker Drive, Chicago, has come out with a light, well-illustrated, and highly readable 20-page booklet on the subject, aimed directly at employees. It's called, *The Adventures of Countersunk J. Lathe, or What the Machine Tool Is Doing to Civilization*.

#### How managerial are foremen?

Despite all talk about restoring supervisors to management status, with managerial authority and prestige, industry as a whole still has a long way to go to achieve the aim, according to Marion N. Kershner, executive vice-president of the National Association of Foremen.

"Of the 700,000 foremen of American industry," he told the last meeting of NAF's board of directors, "about 85 per cent are 'management' in legal reference only.



Mr. "A" sells to industry...



Mr. "B" makes consumer products...

Regardless of what *you* make, here are hard facts on the best place to make and sell it. Within 500 miles from West Penn Electric's territory are 8 of the nation's largest cities, 60% of America's manufacturing establishments—and half the population of Canada! Here—by every test—is the world's greatest market, both consumer and industrial.

Within the territory itself are many of the best sources of raw and semi-finished materials. And qualified workers are available with an above average supply of women workers.

West Penn Electric System combines a utility's uniquely intimate knowledge of its area with an ability and willingness to help you locate profitably.

For quick facts on available buildings and sites, and on how to finance a new plant phone our Area Development Department—Whitehall 4-3740—or send in the coupon below.

Both found  
it pays to locate  
in the middle  
of America's  
best market.

**PULLMAX** for  
**CUTTING COSTS**

**LOOK**  
at what one **PULLMAX**  
can do for **YOU** — in **YOUR**  
**SHEET METAL — ENGINEERING —**  
**AND MAINTENANCE DEPT.**

- 1 Straight Cutting
- 2 Design Cutting
- 3 Inside square cutting
- 4 Circle cutting
- 5 Beading
- 6 Jogging or offsetting
- 7 Slot cutting
- 8 Louver cutting
- 9 Dishing
- 10 Edgebending

Patented.  
Insist on the  
Genuine Pullmax with  
Nationwide Service.

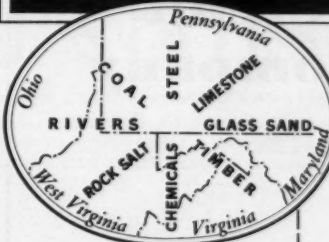
WRITE FOR THE PULLMAX CATALOG OF MONEY-SAVING METAL WORKING IDEAS

**AMERICAN PULLMAX COMPANY, INC.**

2483 NORTH SHEFFIELD AVENUE • CHICAGO 14, ILLINOIS

Monongahela Power Company • The Potomac Edison Company • West Penn Power Company

**West Penn Electric System**



West Penn Electric System, Room 915  
50 Broad Street, New York 4, N. Y.

Without obligation, please send me a hand-picked assortment of current Industrial Data Sheets on available industrial buildings and sites in your service area.

Name and Title .....

Firm .....

Address .....

City .....

## American Credit Insurance

AND

### The Case of the Multitudinous Claims

**T**HIS is an instance of the flexibility of American Credit Insurance in meeting business situations. Whatever the scope or size of your own business, the general principle applies. The policyholder, a manufacturer doing a gross business of just under 35 million dollars, had found himself moving increasingly into an area of multitudinous small accounts, with correspondingly greater lag in collections. Further expansion seemed to threaten an intensification of this situation. What to do? Stop selling? Continue—and accept the tying up of working capital in small bundles? Neither was necessary. Through conferences with an American Credit representative, riders were added to the policy, increasing coverage of small accounts. At the same time, machinery was set up to expedite filing of claims on past due collection items. The first year of expanded activities under this plan showed the following results . . .

Vindicating the policyholder's appreciation of his situation, almost nine hundred separate accounts were filed for collection—aggregating a little less than 600 thousand dollars. Of these, almost two thirds were paid within the free service period of the policy, and the greater part of the remaining one third were paid before final settlement under the Policy. Only a very small percentage of the total original claims proved to be defined insolvencies—on this score vindicating the judgment of the policyholder's Credit Manager. Finally, a loss payment of \$43,151.97 was made to this policyholder, proving the fairly substantial need that actually existed for protection of these accounts receivable.

Whether your business is large or small—whether you do business with many concerns or with a few—you will find new assurance in the knowledge that your accounts receivable are at least as well protected by insurance as your plant, your inventory, and your goods in transit. For your copy of a new booklet: "Credit Insurance, Its History and Functions," write Department 50, First National Bank Building, Baltimore 2, Maryland.

**American Credit  
Indemnity Company**  
of New York

This great majority of foremen falls into one of two categories: unqualified or abused."

Some companies, he said, give foremanship a bad name by using inadequate selection methods, which result in incompetent foremen getting the jobs. Others appear indifferent to their front-line supervisors, he says, adding:

"The communication system between the foreman and his employees is generally far better than that between the foreman and executives."

Foremen trade their opportunity for collective security in the working ranks in exchange for an opportunity to progress by personal initiative, Kershner said, but they need recognition as effective parts of the management apparatus if they are to maintain their faith in management and its principles.

#### In brief

Almost as popular as Scrabble in recent years, courses in how to read faster now are complemented by a do-it-yourself kit, sold for \$9.95 by the Foundation for Better Reading, 100 East Ohio Street, Chicago 11, Ill. The Rapid Reading Kit includes a 24-chapter guide to acquisition of reading and comprehension skills, and a vinyl plastic "Phrase-O-Scope," through which cards containing phrases of increasing length are fed. A spring-actuated shutter "feeds" phrases.

#### Mr. Scrap Man

To sour a year-long campaign to reduce the \$80,000 of material scrapped last year, Motorola, Inc., Chicago, has mounted displays of "big-ticket" items like this in each department, surmounted by fire-engine beacon that sweeps ceiling with red light as reminder. Salvage-staff man in coat adorned with scrap helps foreman talk up program to men.



NOT only in production, assembly, shipping, but also in insulating, screening, sound-proofing buildings—HANSEN Tacker is useful in all types of tacking and fastening operations.

#### BUILDING - MAINTENANCE

- WEATHER-STRIPPING
- INSULATION
- SCREENS
- METAL LATH
- CORNERITE
- SOUND TILE
- TAR AND BUILDING PAPER
- WALLBOARD
- COMPOSITION BOARD
- HYDRON
- MASKING MATERIALS
- MOISTURE-PROOFING

#### 36 MODELS—80 STAPLE SIZES

A model for every tacking or fastening purpose. For light, medium and heavy-duty operation. Staples in single- or double-leg, narrow or wide-crown tacks, in a variety of lengths and sizes. (Specify use. Submit samples.)



**A. L. HANSEN MFG. CO.** Request Booklet TODAY  
5034 RAVENSWOOD AVE., CHICAGO 40, ILL.



#### TOO MANY HANDS SPOIL THE PROFITS

Ten hands when one finger on a pushbutton will do? Modernize your materials handling equipment! Use your men much more productively!

See hundreds of new developments in equipment, machines, supplies and services exhibited by the industry's pacesetter manufacturers. Write for free tickets: Clapp & Poliak, Inc., 341 Madison Avenue, N. Y. 17.

#### 6th National Materials Handling Exposition

International Amphitheatre, Chicago  
May 16-20, 1955

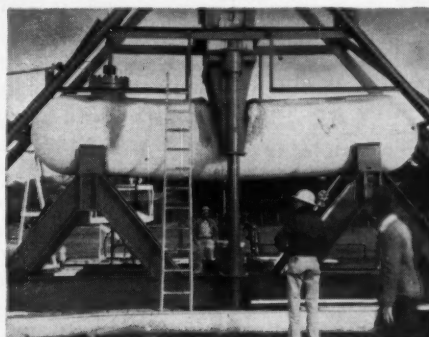




# Only STEEL can do so many jobs so well



**Steel Takes to the Air.** In Arizona, there's a sandy river bed where flash floods frequently occur. A gas pipe line had to cross the river bed. So, to avoid the flash flood danger, the 30-inch welded pipe line took to the air for 1020 feet. Pipe and supporting structure were fabricated and erected by U. S. Steel.



**Milk Tastes Better** when served this modern, convenient way. Many restaurants and school cafeterias use these stainless steel milk dispensers. Stainless won't rust. It's sanitary and easy to clean. And it's hard enough to resist dents and wear.

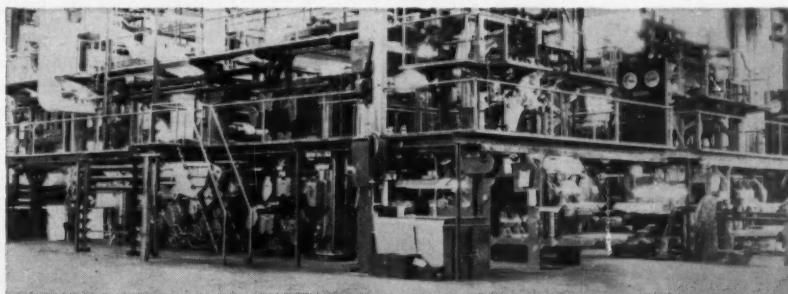
**Frozen Steel.** Ordinary steel becomes brittle at low temperatures. But U. S. Steel recently introduced a completely new alloy known as USS "T-1." This steel retains its strength and toughness at high and low temperatures; but even more important, it can be welded without need for heat treatment. The picture shows a "T-1" welded pressure vessel that survived a blow from a 13-ton ingot dropped 73 feet. The tank was chilled to  $-22^{\circ}$  F.

\*Trade Mark



This trade-mark is your guide to quality steel.

SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.



**1200 Feet a Minute!** That's how fast this magazine printing press gobbles up paper. At the delivery end, a sharp steel knife snaps in and out 640 times a minute to cut the paper. American Quality Springs are used to cushion the shock. They perform so well that the customer has been using them in these presses for 20 years.

## UNITED STATES STEEL

For further information on any product mentioned in this advertisement, write United States Steel, 525 William Penn Place, Pittsburgh, Pa.

AMERICAN BRIDGE .. AMERICAN STEEL & WIRE and CYCLONE FENCE .. COLUMBIA-GENEVA STEEL .. CONSOLIDATED WESTERN STEEL .. GERRARD STEEL STRAPPING .. NATIONAL TUBE OIL WELL SUPPLY .. TENNESSEE COAL & IRON .. UNITED STATES STEEL PRODUCTS .. UNITED STATES STEEL SUPPLY .. Divisions of UNITED STATES STEEL CORPORATION, PITTSBURGH  
UNITED STATES STEEL HOMES, INC. • UNION SUPPLY COMPANY • UNITED STATES STEEL EXPORT COMPANY • UNIVERSAL ATLAS CEMENT COMPANY

5-284



## By George, there is a difference in check signers!

You can tear 'em down or take our word for it: there *is* a difference in check signers.

Take inking. Only Cummins signers operate like a big printing press. There's no fading . . . the last signature is as clear as the first. Exclusive Magic-Flo inkwell is easy to fill, permits half a million signatures without refilling. No messy ribbons to change.

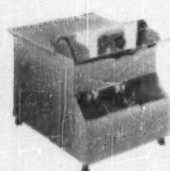
Speaking of ribbons, the average check signer ribbon installation costs from \$4 to \$5. For good impressions, ribbons should be replaced about every 10,000 signatures. The same number of signatures on a Cummins signer, since a \$4 can of ink lasts for half a million signatures, costs about

8 cents—a substantial annual saving.

You think embossed checks are safe? The Cummins method of protecting checks is far safer. It's the best method of preventing alterations. What's more, the Cummins Check Signer signs and dates *at the same time*—one simple, fast operation.

The Cummins signer has four-way lock and key control. You hold the keys, so you have constant control over your signature. Compare this safety to any other signer. In fact, Cummins is so sure its signers are safe, it gives you an insurance policy that protects you and your bank, in amounts up to \$25,000, against any loss due to manipulation of a Cummins-signed check!

One last thing . . . you can't beat Cummins signers for speed. They sign, date, protect and stack in sequence up to 450 checks a minute. No other check signer can match this. Mail coupon for full information.



Cummins Signers can be quickly converted to endorser. Also available for wide variety of paper marking jobs. Dies can be made to print small ad or company slogan along with signature or endorsement.



Cummins  
Business  
Machines  
sales and  
service  
offices in  
principal cities.

IN BUSINESS AND BANKS SINCE 1897  
**Cummins**

**CUMMINS BUSINESS MACHINES**  
Division of Cummins-Chicago Corp.  
Dept. DR-45, 4740 N. Ravenswood Ave., Chicago 40, Ill.  
Please send me full information on Cummins Check Signers.

Name \_\_\_\_\_  
Name of Business \_\_\_\_\_  
Address of Business \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

## SALES & DISTRIBUTION

Marketing notes and comments

### How to get Good Case Studies; plus

### Direct Mail and Advertising Check-ups

*New population study shows current urban markets will not move—just grow higher.*

A KEY problem in sales promotion and product publicity is how to supply company salesmen and the trade press with a constant stream of current case studies. Since nothing sells a prospect better than a successful installation similar to his own application, sales managers and promotion men spend a good deal of time beating salesmen over the head to get better co-operation on case studies. In some company sales meetings, entire sessions are devoted to techniques designed to draw sales-making data from satisfied customers.

In step with the trend, Standard Register Company this month is sending to the field staff a form it calls a "Publicity Check Sheet." Its purpose is to describe, point by point, the salient features of the case-study landscape.

For example, under point "A" the major question is "Did the customer solve a problem through installation of the system?" Amplifying questions follow: Are there any tangible benefits? Did weaknesses of the old system impair efficiency of operations? Does new system contribute materially to better performance of the function to which it is related? Can the "problem" and improvements along this line be specifically pin-pointed?

The second key question asks how application affected measurable dollar savings. Can benefits be expressed in terms of increased production? Cost per finished product (or records in the case of Standard Register)? Operator's time? Payroll savings? Fewer rejects? Other ways?

Point "C" checks on novel features and new ideas. Is there any design or construction feature or application which would have an element of news value? Any recent development in machines employed that might give an "automation" slant?

Point "D" is frequently overlooked by many companies. Was sound, creative thinking applied to solution of the problem? In other words, is the new system or application such that the company can, in effect, endorse it as the answer for others whose problems and circumstances are similar?

The final question checks on the potential application for other firms and shows how to screen out case studies where installations are unique.

The Publicity Check Sheet ends with words of caution regarding handling of customer relations. "Judge the specific merits of a given procedure. There is practically no publicity value in just listing a good customer who uses a variety of equipment. . . . Do not, under any circumstances, make promises to the customer regarding publication until you have heard from the home office. Publicity can be helpful in improving customer relations. But it can backfire if you make promises we can't keep."

Along with the check list, Standard sends another form for the salesman to fill out when he thinks he has a case study worth following up. This report, called a "Story Lead," gives the sales department the information it asks for in the check list. Actually, it rephrases the



check-list questions in the form of statements which the salesman completes. With this report functioning as the skeleton of a potential case study, publicity writers are able to pin-point the particular aspects they want to emphasize.

### Industrial Direct-Mail Check List

It never hurts to go back to fundamentals. A step-by-step routine developed by Tension Envelope Corporation will keep your campaigns moving, may bring up points you have forgotten. How many of these steps are you overlooking?

☐ Decide what your direct mail is supposed to do. Bring orders? Inquiries? Support salesman's calls? Build company prestige?

☐ Decide who will make the final decision in your company's favor. What persons in what organizations are you trying to influence?

☐ Build your mailing list carefully. Is it up to date?

☐ Outline your direct-mail approach. How much time between direct-mail calls? All pieces on one product? A campaign of specific length or will you continue until a prospect buys? What happens after the first order?

☐ What will each mailing cost?

☐ What forms will the mailings take? Letters? Folders? Booklets? All the same or a variety of pieces?

☐ Prepare copy and layouts.

☐ Consult with the local Post Office authorities to make certain you comply with regulations.

☐ Print and process direct mail.

☐ Tabulate your replies.

☐ Correct your address list with

returned pieces as they come in.

☐ Fill orders and answer inquiries promptly.

☐ Follow up with your next mailing.

### Small but Hot Ad Check List

In a speech recently, J. E. Borendame, director of marketing services, Acme Steel Company, asked a number of questions many advertising managers would have trouble answering. Here are some of them:

☐ Are your sales objectives the same as your advertising objectives? Are they defensive or offensive?

☐ Does your advertising agency have the same marketing philosophy as your company?

☐ Is your advertising program really a project? Are you, in other words, an "in-and-outer"?

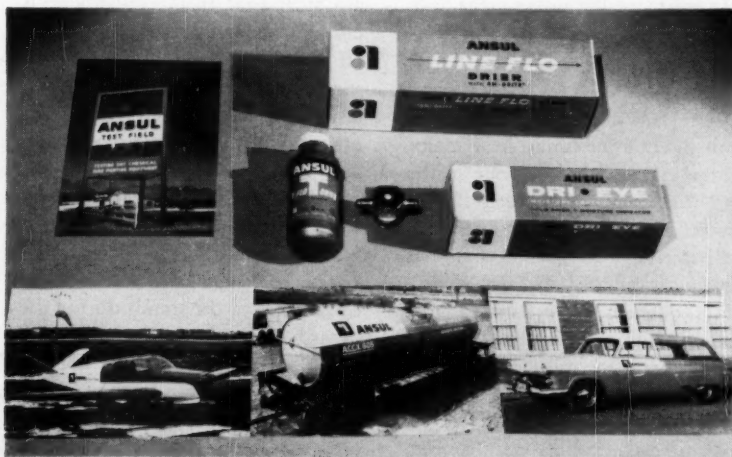
☐ Is your advertising calculated to reach the key buying influences in your premium markets? Unless you know who and where they are, you are guessing.

☐ Is your space buying predicated on past sales or on the size of the potential market? How much do you know about your market potential by product line?

☐ Have you established a small percentage of your total budget to research your advertising program in terms of layout, size, color, copy, position, and bleed?

☐ Are inquiries handled efficiently, effectively, and courteously? Are all inquiries qualified and do you keep accurate records of all sales resulting from advertising?

☐ What actually happens to your sales literature? Do you keep close watch on inventories?



Double dot "a," designed by Raymond Loewy, to co-ordinate all packaging helped win Package Designers Council award for Ansul Chemical Company.

The answer to your open-mesh requirements...

# EXPAND-X\*

ALL-IN-ONE-PIECE EXPANDED METAL

For grilles, guards, enclosures, shelving, grating

EXPAND-X (GRATE-X in the case of expanded metal grating) gives you so many practical advantages: expanded from a solid sheet of steel, it has great rigidity and strength against impact. Yet it permits maximum passage of light and air. EXPAND-X is light-weight, easily fabricated and welded; cuts, curves, shapes without raveling. No joints to fail.

The result is a different and better material—one with practically limitless industrial and consumer applications.

EXPAND-X comes in various sizes and gauges in carbon steel, stainless steel, aluminum (and other materials on special order.) See Sweet's file, 1b Un

Write for this free booklet today. Find out how EXPAND-X and GRATE-X can work for you. Address Dept. (DR-1), United States Gypsum, 300 West Adams St., Chicago 6, Ill.

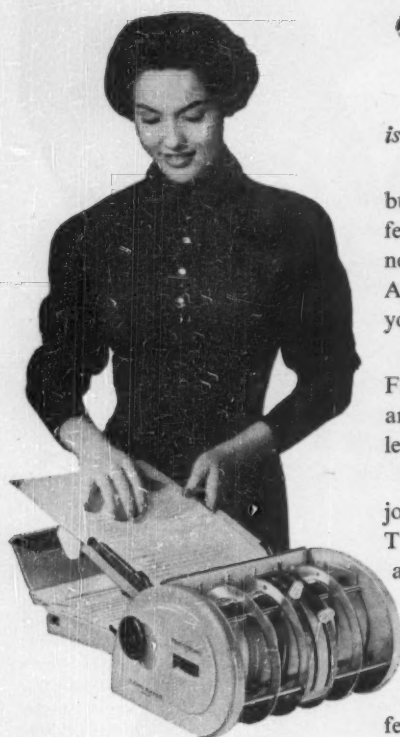
\*T.M. Reg. U.S. Pat. Off.



UNITED STATES GYPSUM • Industrial Sales Dept.

Expanded Metals • Hardboard and Insulation Boards  
Sound Conditioning • Roof Decks • Gypsum and Lime

# Costs less than hand-folding!



The semi-automatic FH costs less than a typewriter!

The larger FM, fully automatic folds up to 19,000 sheets an hour.

**PITNEY-BOWES**  
**Folding Machines**

Made by Pitney-Bowes, Inc. . . . originators  
of the postage meter . . . 94 branch offices,  
with service in 259 cities in U.S. and Canada.



At today's salaries, *folding by hand* is a high-cost operation in any office.

Even if hand-folding letters, forms, bulletins, mail enclosures, takes only a few hours a month, you'll welcome this new Pitney-Bowes Folding Machine. And the girls in your office will bless you for it!

Little larger than a typewriter, the FH costs less—but folds far faster than anybody can by hand—double-folds letter sheets up to 5000 an hour.

The FH can be set to do any folding job in less time than you can tune your TV set. Simply slide two knobs along an inch scale to the widths of folds wanted. It's practicable, anybody in your office can use it—even you!

The FH is electrically driven, has semi-automatic feed. (Automatic feed optional at slight extra cost.) Light and portable, it can be moved easily and used anywhere.

It makes eight different folds—in sheets from 3 by 3 inches to 14 by 8½ inches, and will fold stapled sheets.

In even small offices, the FH quickly pays its way, and increases the output. Call the nearest Pitney-Bowes office for a demonstration. Or send the coupon for a free illustrated booklet.



PITNEY-BOWES, INC.  
1534 Pacific St., Stamford, Conn.

Send free booklet on  
Folding Machine to:

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

## SALES & DISTRIBUTION

Continued

### How Cities Grow: New Study Might Influence Future Marketing Plans

WHERE do people go when they move? That question could have much significance ten or 20 years from now, because the trend toward greater population mobility shows no sign of lessening. It could affect warehouse location plans, territorial distributions. How serious is the population exodus from the cities and how far is dispersal of population likely to go?

A study recently completed by a University of Oregon sociology professor, Dr. Walter T. Martin, suggests that the future is not nearly so bleak as some distribution experts think. Dr. Martin's study of the Pacific Coast region suggests that that area's population movement trends are similar to national trends, except that the rates of change are greater.

The sociologist finds a general rapid growth of the total population is surpassed in most instances by a vigorous urban growth. The rate of urban growth, however, is not uniform. States with the most cities and the biggest cities in 1940 were the states with the most rapid urban growth by 1950. Furthermore, counties most highly urbanized in 1940 tended to have the highest rate of urban growth by 1950 and, further, counties with a high population density in 1940 grew denser faster by 1950.

In brief, the big urban areas have been growing bigger, faster.

#### The Moves Are Short

The fastest-growing cities are most likely to be found near major central cities with a decrease in the rate of growth as distance from the central city is increased. The highest percentage of growth figure is within 25 miles of the central city. Cities outside the urbanized area but still within the standard metropolitan area are most often found in the medium growth stage, but cities outside the standard metropolitan classification are concentrated in the slow growth category.

In other words, current bigness or proximity to bigness begets the highest rate of growth.

#### Young Folks At Home

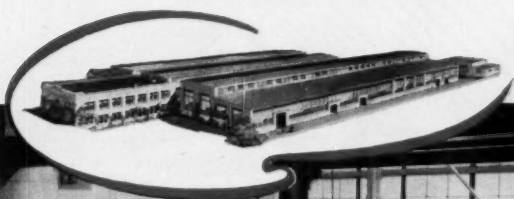
One of the key findings for marketing management is that the rapid growth rate of the urban and rural non-farm population (a Census definition which often includes suburbanites) is caused by in-migration and by a high birth rate. Linking these together points to a high influx of "migrants" from farm to city and from city to suburbs.

Another key fact emerging from the report is that the West has already ceased to grow by adding to its rural farm population. There are ominous rumblings for that portion of the farm market in the fact that only seventeen of the 133 Western counties studied did not lose farm population during a period of generally heavy growth.

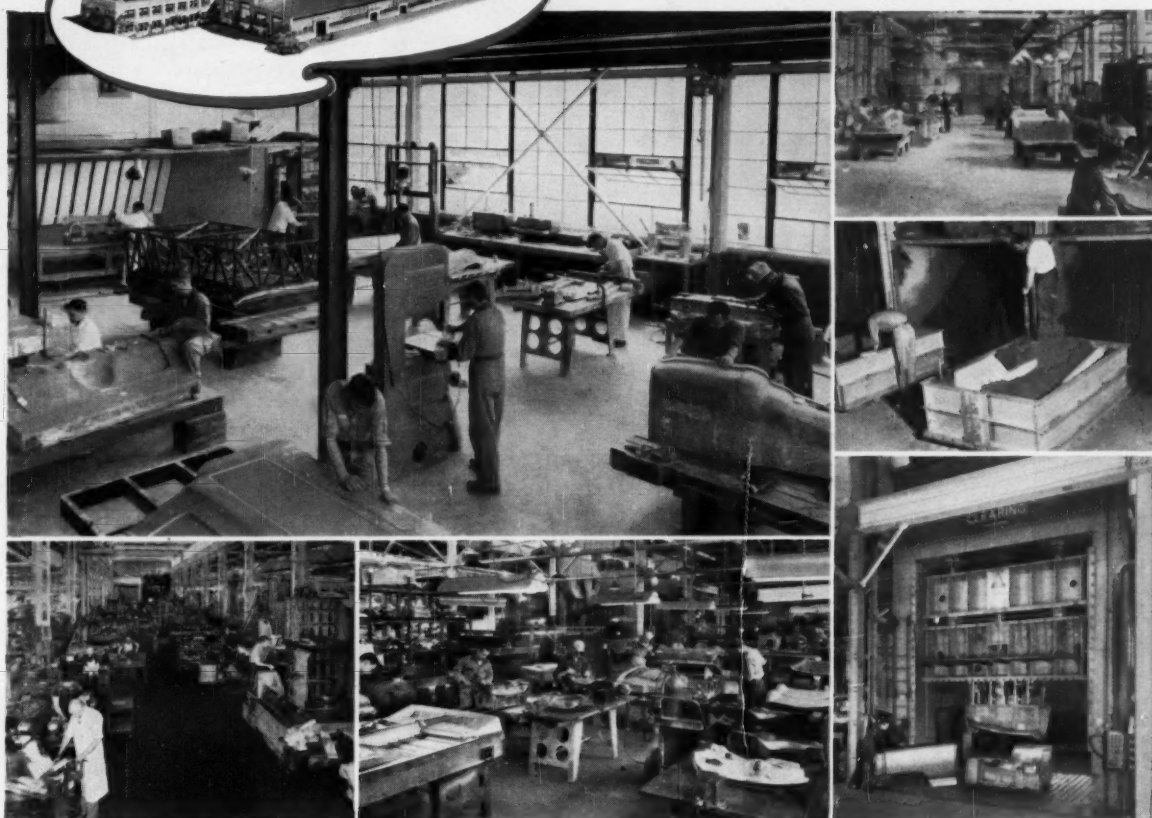
What will the growth pattern mean to the West Coast in particular? "The rapid urbanization is mainly a continuing concentration of new urban and rural non-farm population around well-established metropolitan centers. This pattern of development gives a special meaning to the statement that the West is becoming a region of city dwellers. While the statement is valid, the patterns of urbanization are such that the development is taking place with a minimum effect on sparsely settled areas in each state, which are far from urban in any sense of the word. There are many counties with no urban places and less than one inhabitant per square mile. . . . The casual observer will be mainly impressed with the vastness. . . ."

To Professor Martin, the over-all consistency of the trends during the decade of the forties strongly suggests that urbanization during the fifties will be a continuation of the same pattern, namely, the closer the area to a large city, the faster the growth.

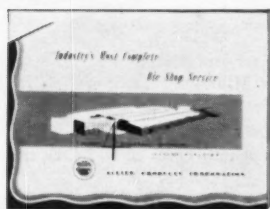




## THIS IS ALLIED'S PLANT 4



## Industry's **MOST COMPLETE** Die Service



This new brochure will give you full information on the scope of Plant 4's operations. Write for your copy.

In Allied's Plant 4 at Hillsdale, Michigan, are the facilities to meet every sheet metal die need. Experimental . . . prototype . . . short run . . . high volume production dies . . . are all produced here. When desired, finished stampings in short run quantities are also supplied.

Allied is unique in being the only source in the country offering three basic die materials—plastic, zinc alloy, steel—or combinations of these materials. Any die development can be handled. Over 65,000 square feet of working area combines pattern shop, plastic shop, foundry, machining facilities, metal shop, press equipment and railroad shipping capable of handling dies of any size and tonnage.

You name your sheet metal die requirements. You'll find Allied's Plant 4 can meet them—exactly!



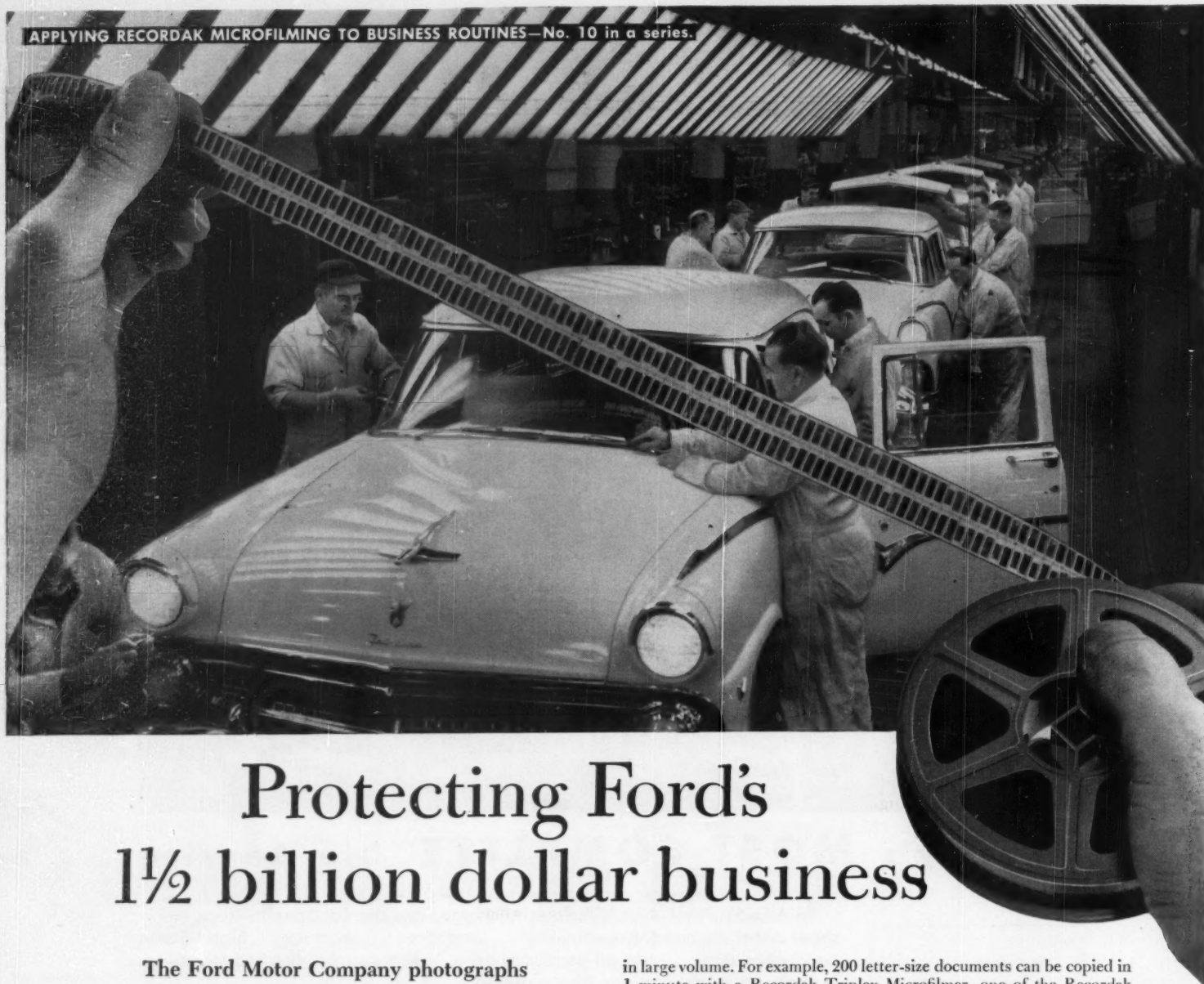
## ALLIED PRODUCTS CORPORATION

DEPT. 26 • 12675 BURT ROAD • DETROIT 23, MICHIGAN

*Produced in*  
**ALLIED'S FIVE  
OTHER PLANTS**

SPECIAL COLD FORGED PARTS; STANDARD HEXAGON HEAD CAP SCREWS; PRECISION HARDENED AND GROUND PARTS; SHEET METAL PRODUCTION DIES; R-B INTERCHANGEABLE PUNCHES AND DIES; POWDERED METAL PARTS

APPLYING RECORDAK MICROFILMING TO BUSINESS ROUTINES—No. 10 in a series.



## Protecting Ford's 1½ billion dollar business

The Ford Motor Company photographs  
its vital records on Recordak Microfilm . . .  
gets valuable extra protection at low cost

Insurance against loss of property and sales is not enough.  
*Not enough* when the life of a business is at stake.

If Ford's vital records were lost, reconstruction would be a  
hopeless task. But Ford insures against this possibility—however  
slim—by microfilming its valuable documents and storing the  
Recordak Microfilm copies at remote locations.

Microfilming is best for the job for the following reasons—

1. Quickest, easiest way to duplicate records of all types and sizes

in large volume. For example, 200 letter-size documents can be copied in  
1 minute with a Recordak Triplex Microfilmer, one of the Recordak  
models used by Ford.

2. **Lowest Cost.** As many as 29,000 check-size records fit on a 100-ft.  
roll of Recordak 16mm. Microfilm which costs only \$3.65, including  
processing charges.

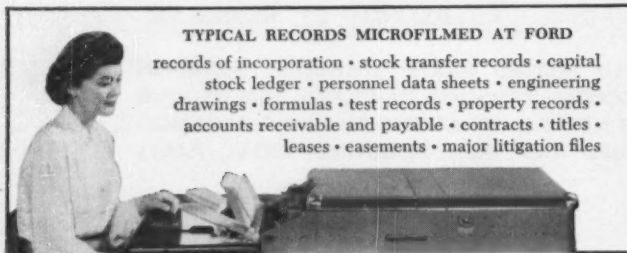
3. **No deterioration.** Recordak Microfilms are processed to meet the  
high specifications of U. S. Bureau of Standards for archival films; will  
remain picture-perfect over the years.

4. **99% space savings.** Ford stores over 18 million Recordak film  
copies in a 20 x 30-ft. area. Not only does this save on filing equipment,  
but it also makes all records easily accessible.

*Protection* is only one of the benefits which Recordak Microfilm-  
ing is bringing to over 100 different types of business . . . thousands  
of concerns. Write for free booklet, "Protection of Vital Corporate  
Records," and full details on Recordak Microfilming. Recordak  
Corporation (Subsidiary of Eastman Kodak Company), 444  
Madison Ave., New York 22, N. Y. "Recordak" is a trade-mark

### TYPICAL RECORDS MICROFILMED AT FORD

records of incorporation • stock transfer records • capital  
stock ledger • personnel data sheets • engineering  
drawings • formulas • test records • property records •  
accounts receivable and payable • contracts • titles •  
leases • easements • major litigation files



## RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—  
and its application to business systems





Protect your inactive business records with proper storage. LIBERTY STORAGE BOXES are constructed of highest test corrugated fibre-board. Dust-proof, spill-proof protection. Liberty's storage system assures fast-finding of any record. Try LIBERTY BOXES for quality and low cost. 25 stock sizes. Sold by leading stationers.

Send today for FREE Catalog picturing and describing economical record storage products for every business.

**BANKERS BOX COMPANY**  
720 S. Dearborn Street • Chicago 5, Ill.



Saves Typing Time . . .  
Stops Eye Fatigue!

**PANAMA**  
**"COPY-HOLDER" BOX**

Panama-Beaver's exclusive patented carbon paper box has a built-in copy holder that flips open with a flick of the wrist. Keeps copy material upright and in full view . . . speeds work . . . cuts office costs. Folds up neatly under box lid after use. COSTS NOTHING EXTRA when you buy Panama-Beaver Carbon Paper—America's sharpest-writing, cleanest-erasing smudge-free carbon!

Have the Panama-Beaver representative near you show you the Copy Holder Box without obligation!

**PANAMA-BEAVER**  
*Ribbons and Carbons*  
Coast to Coast Distribution  
MANIFOLD SUPPLIES CO., 19 Rector St., N. Y. 6, N. Y.  
Ebony Duplicating Carbons • Eye-Saver  
Unimasters • Lustra Colorful Inked Ribbons

## PRODUCTIVITY

Continued from page 38

concealed in the price Mr. and Mrs. Consumer pay for the goods and services they buy.

Price is the automatic governor on this sensitive tandem machine of ours, which keeps its production and distribution mechanisms running "in balance." When we overload the price we overload the machine, no matter by what name we may call the overload. If the price is reduced on any type of goods, or any service, the lower price automatically broadens the market and the mass-production part of the machine can speed up. If the price is increased, the market shrinks and the production part of the machine slows down.

The machine is not fooled by semantics. Costs are costs under whatever name.

When the leaders of organized labor began to encounter stiff resistance to their demands for higher and still higher wages, and shorter and still shorter hours, they shifted their demands to more and more of the leisure and security products of our mass-production-distribution machine. They campaigned for longer and longer vacations with pay; more and more paid holidays; higher and higher pensions; larger and larger insurance and hospitalization benefits—all to be paid by the employer. To these and other ingenious forms of less work for the same or more pay they gave the innocent-sounding name "fringe benefits."

Naturally, fringe benefits became tremendously popular. They seemed quite innocuous—just little tidbits to add to the main meal; but in their effect on costs they add up to a huge total, every penny of which has to be added to the price Mr. & Mrs. Consumer must pay for the goods and services they buy.

This load can be carried by the machine only if Mr. and Mrs. Consumer are able—and willing—to pay these fringe costs. But we cannot escape the fact that there is a definite limit to the load that can be piled on the price of goods and services without reaching the bottom of their pocketbook, or at least causing them to snap it shut in the face of retail merchants or service purveyors who act as distributing agents for our mass-production machine.

The latest threat to the balanced



Model MC-4-24. 4000 lb. cap.

## Save Space... Save Money with CRESCENT PALLETIER

Barrett Telescopic Palletier—the all-purpose electric fork truck—handles a wide range of jobs. Loads and unloads trucks, box cars. Lifts capacity loads to higher levels for spacesaving high stacking. Reduces man power to a minimum. Speeds flow of material through plant. Cuts handling costs to the bone.

**SAFETY FEATURES:** Complete operator visibility in all directions—less fatigue. Smooth-acting hydraulic brakes. Standard collapsed heights—68" or 83". Total fork lifts—90" or 130", with either high or low free lift. Nontelescopic models; special lifts. Battery and Ready Power available. Attachments for all models.



Barrett Palletier Catalog gives detailed description. Also Catalog 535 on the complete Barrett Line. Your request will bring copies.



**Barrett equipment for every job**

High labor costs demand specialized equipment. There is a Barrett-built unit specially designed to handle any moving job at low cost... even when operated by less experienced help. Your Barrett representative will gladly assist in selecting the type and model of material handling equipment best suited to your needs.

**BARRETT-CRAVENS COMPANY**  
612 Dundee Road, Northbrook, Ill.  
Representatives in All Principal Cities.  
Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada

**BARRETT**  
ONE MAN DOES MORE THAN 3 OR 4... WITH A BARRETT

operation of our mass-production-distribution machine is the demand for a guaranteed annual wage for industrial workers. Without in any way belittling the social desirability of such income security, or condoning the hardships which lay-offs entail, we should not ignore the serious danger of suddenly throwing this new load on the machine before the difficult economics of such a guarantee have been worked out.

It is devoutly to be hoped that the day will come when the machine can turn out this form of security in dependable volume; but the load will have to be taken on gradually if it is not to jeopardize the production of all six products. It will require time, patience, and a high quality of economic statesmanship on the part of all concerned, to make the machine produce this kind of security on a dependable basis. Management and labor may sign contracts "guaranteeing" a wage of any amount, to run for any period of months or years; but these contracts will not be worth the paper they are written on unless Mr. & Mrs. Consumer approve them—and can afford their added cost.

The old argument, that the added costs of higher wages and increased fringe benefits come out of profits, has lost its point in recent years. There is to-day an automatic governor on profits, as well as prices. It is called "competition," and it works positively—and fast—in our dynamic competitive age.

### Consumers' Power

In an age of scientific research our laboratories, rather than the laws on our statute books, have all but destroyed yesterday's monopolies. With the steadily increasing complex of competition, business men have less and less control over the price-making function. It has been taken over by Mr. and Mrs. Consumer, who to-day pick and choose among a variety of goods and services which will satisfy much the same needs. Price is the balancing factor.

To an increasing extent Mr. and Mrs. Consumer are also going to make the decisions on wage rates, fringe benefits, and the leisure, security, and profit products of the machine. It will all depend on whether they are able—and willing

—to pay what management and labor jointly ask for the products and services they offer in the market place.

To-day Mr. and Mrs. Consumer sit silently on the sidelines in every management-labor bargaining session. If the bargain arrived at (whether it be concerned with wages, hours, or fringe benefits) increases the price too much, they will buy a competing product or service which sells at a lower price. Or they will simply refuse to buy. They sit, also, in the Committee Rooms of Congress when farm-price-support and minimum-wage bills are being written. They cannot veto the bills, but they can—and often do—kill their effectiveness in the market place by simply refusing to buy. And their action is final.

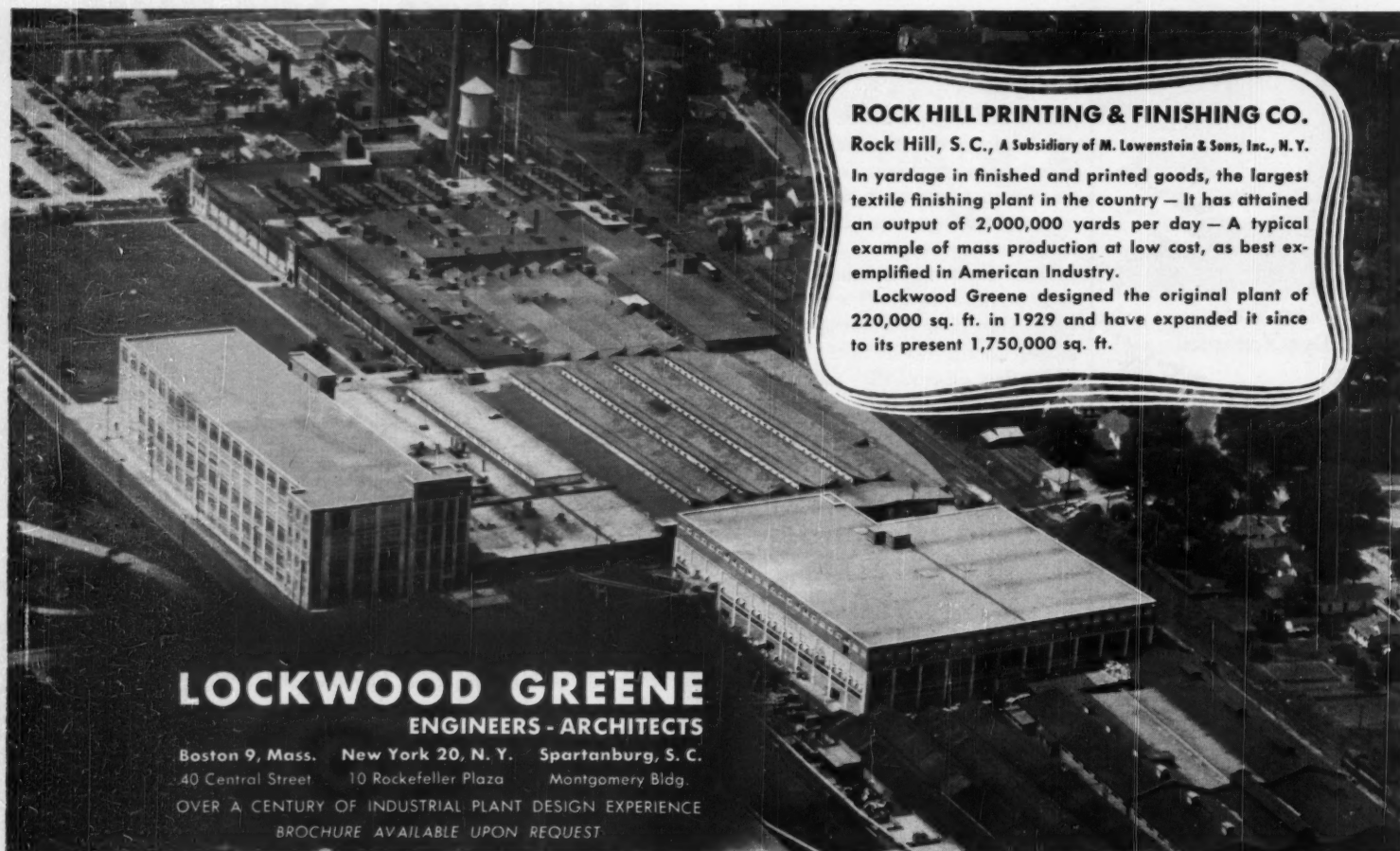
The two newest products of our Machine-For-Good-Living—leisure and security—are still very much on trial. Business men know from sobering experience that a new product must be test-marketed for a reasonable period before it can safely be put into full production. We have not yet had sufficient experience with either of these two prod-

ucts to know for a certainty that we can produce and distribute them, in the increasing volume demanded, at a cost that Mr. and Mrs. Consumer can or will pay.

When the leaders of organized labor talk of the 30-hour week with the same pay, but without increased productivity per man-hour to absorb the increased labor costs, they are asking for a volume of leisure that threatens to throw the whole mass-production-distribution machine out of balance by suddenly and drastically increasing unit costs of goods and services.

Management and labor alike must keep reminding themselves that price is the governor on our sensitive tandem machine, that it is competition and value-to-the-consumer, rather than the labor contract, which set the prices of all goods and services.

As for the pension-product of our machine, we are learning that it requires more than a collectively bargained contract, and more than good intentions on the part of an employer, to guarantee this form of future security. It requires dependable profits. The hosiery industry



**ROCK HILL PRINTING & FINISHING CO.**  
 Rock Hill, S. C., A Subsidiary of M. Lowenstein & Sons, Inc., N. Y.

In yardage in finished and printed goods, the largest textile finishing plant in the country — It has attained an output of 2,000,000 yards per day — A typical example of mass production at low cost, as best exemplified in American Industry.

Lockwood Greene designed the original plant of 220,000 sq. ft. in 1929 and have expanded it since to its present 1,750,000 sq. ft.

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# Commercial Credit Reports

CONSOLIDATED net income of the Finance Companies, Insurance Companies and Manufacturing Companies from current operations, after payment of taxes, exceeded 24 million dollars—the largest in Commercial Credit's history. The volume of receivables acquired by the Finance Companies and the relative outstandings thereof show a reduction from 1953 as a result of the Company's policy of refining its motor retail and wholesale financing of cars and also from the reduction in sales of certain motor car manufacturers during 1954. However, during 1954 the Company made a substantial increase in financing cars of other manufacturers and thereby has obtained a greater diversification in its motor financing volume.

Net income per common share was \$4.86 with some 408,245 more shares outstanding on December 31, 1954, as compared to December 31, 1953. The book value of the common shares has increased \$12.85 during the past five years and on December 31, 1954, was \$35.35. During this

same five year period the Company paid dividends of \$55,931,601 on its common stock and retained \$51,371,781 in the business. Capital funds of the Company exceed 175 million dollars and reserves of over 80 million dollars were available for credit to future operations, expenses, credit losses and earnings.

We appreciate the sustained use of our facilities made by manufacturers, wholesalers, retailers and consumers and the continued support of our stockholders, the institutions and others who have provided our operating funds. We are grateful for the intelligent cooperation and enthusiasm of the officers and employees in the handling of their Company's operations. The outlook for 1955 for the Company and its subsidiaries appears very promising.

E. C. Wareheim, *Chairman of the Board*

A. E. Duncan, *Founder Chairman*

E. L. Grimes, *President*



## COMMERCIAL CREDIT COMPANY

BALTIMORE 2, MARYLAND

Offering services through subsidiaries in more than 400 offices in the United States and the Dominion of Canada

### Condensed consolidated balance sheets as of December 31, 1954 and 1953

ASSETS			LIABILITIES		
	1954	1953		1954	1953
CASH AND MARKETABLE SECURITIES.....	\$ 132 855 034	\$ 143 194 074	NOTES PAYABLE, SHORT TERM.....	\$ 363 162 500	\$ 483 290 000
RECEIVABLES:			ACCOUNTS PAYABLE AND ACCRUALS.....	41 226 001	37 053 609
Motor and other retail.....	547 831 264	641 240 127	U.S. AND CANADIAN INCOME TAXES.....	25 156 943	31 581 121
Motor and other wholesale...	110 243 500	135 148 774	RESERVES.....	62 771 971	76 048 758
Direct loan receivables.....	44 493 577	40 302 307	LONG-TERM NOTES.....	184 737 500	192 625 000
Commercial and other receivables.....	132 053 574	126 048 068	SUBORDINATED LONG-TERM NOTES.....	102 500 000	100 000 000
	834 621 915	942 739 276	NET WORTH:		
Less: unearned income.....	40 720 083	44 863 451	Common stock.....	49 852 961	45 770 510
reserve for losses.....	12 448 330	14 246 328	Capital surplus.....	27 910 552	15 591 922
Total receivables, net..	781 453 502	883 629 497	Earned surplus.....	98 484 681	86 735 773
OTHER CURRENT ASSETS..	22 231 596	22 924 942	Total net worth.....	176 248 194	148 098 205
FIXED AND OTHER ASSETS	15 174 820	13 063 893		\$ 955 803 109	\$1 068 696 693
DEFERRED CHARGES.....	4 088 157	5 884 287			
	\$ 955 803 109	\$1 068 696 693			

### A few facts as of December 31, 1954 and 1953

	1954	1953		1954	1953
Gross finance receivables acquired	\$2 467 968 945	\$3 111 621 259	Net income before U.S. and Canadian taxes.....	45 391 721	52 153 574
Gross insurance premiums, prior to reinsurance.....	33 289 952	49 718 572	Less U.S. and Canadian taxes on income.....	21 162 948	28 305 583
Net sales manufacturing companies	113 584 595	110 709 890	Net income of		
Gross income—finance companies	\$ 75 395 990	\$ 82 837 816	Finance companies.....	13 949 782	14 492 050
Earned insurance premiums, etc.	43 159 339	47 003 129	Insurance companies.....	7 215 929	5 454 085
Gross profit—manufacturing companies.....	13 957 241	16 651 081	Manufacturing companies..	3 063 062	3 901 856
Investment and sundry income..	3 095 755	2 187 836	Total credited to earned surplus.....	\$24 228 773	\$23 847 991
Gross income.....	135 608 325	148 679 862	Common stock per share*		
Total expenses and reserves, etc.	67 330 721	71 389 320	Net income.....	\$4.86	\$5.21
Interest and discount charges...	20 602 557	25 136 968	U.S. and Canadian tax on income.....	4.24	6.18
Provision for past service benefits under amended retirement plan	2 283 326		Dividends.....	2.60	2.40
			Book value.....	35.35	32.35
			Interest and discount charges—times earned.....	3.31	3.07

\*The number of shares outstanding at December 31, 1954 increased 408,245 compared to December 31, 1953.

Copies of our 43rd Annual Report available upon request

# THESE COMPANIES HAVE FOUND HELLER FINANCING PLANS THE SOLUTION TO OPERATING CASH PROBLEMS



This year, these companies and others will use in excess of one-half billion dollars of Heller cash to solve such financial and operating problems as . . .

- meeting competitors' trade terms—*
- having sufficient cash to buy and stockpile raw materials at best market prices—*
- building inventory to insure smooth and continual operation for peak selling periods—*
- purchasing new equipment or modernizing—*
- carrying heavy accounts receivable*

CASH and special plans geared to individual business operations come from

Heller under their diversified financing services. Heller plans do not interfere with management or profits. What you make is yours—yet you can use as little as \$25,000 or as much as \$3,000,000 for months or years. The cost is economical for you pay only for the money you use as your need varies.

To learn the facts, write for a free copy of our brochure, "Operating Dollars for Every Business."

At the same time you are invited to write in strict confidence about financial problems in your own business to which our services might apply.



## Walter E. Heller & Company

DEPT. DR  
105 W. ADAMS ST., CHICAGO 90  
10 E. 40th STREET, NEW YORK, NEW YORK

offers unhappy proof. After more than three years of operation, this industry's \$3.5 million pension plan (which had been instituted as the result of a 1950 labor arbitration award) was liquidated. Mrs. Consumer balked at the high cost of hosiery; the machine stalled; the future-security-product had to be sacrificed to save the jobs-product.

### Dollar's Future

Our machine's future-security-product has another serious flaw: there is no guarantee that the dollar put aside for to-day's production will buy a dependable dollar's worth tomorrow. A brochure, *The Pension Idea*, by Dr. Paul L. Poirot, published by the Foundation for Economic Education, Inc., reviews the experience of the French in their quest for "social security." It brings out the fact that a fixed monthly income which might have been adequate for living in 1914 would, by early 1950, purchase only one modest meal a month. Over a period of 36 years the French franc had lost more than 99 per cent of its purchasing power.

Fortunately for us, our own dollar has not suffered such a drastic shrinkage; but we must face the fact that a dollar put aside in a pension fund in 1935 when our own Social Security Act was put on the statute books has to-day a purchasing power of only 51.4 cents, based on the Consumer Price Index of the United States Bureau of Labor Statistics for December 1954.

The simple truth is that both leisure and security are, by their very nature, *by-products* of our machine, not standard products like goods and services, jobs and profits. They can be turned out in dependable volume only when the machine is running in balance and at a fairly high rate of production.

Is there no way to improve and protect these by-products, so that they will continue to contribute dependability to the American way of life?

There is no easy way; but there is at least a sensible approach. It calls for a fair division of all six products of each business enterprise among its employees, its owners, its customers, and federal, state, and local governments in the form of sup-portable taxes.

It does no good to damn the leaders of organized labor or our elected

## WHERE IS THAT DARN PAPER?



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OGDENSBURG, N. Y.  
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## \* Automatically! Sani-Dri Electric Dryers

\* **eliminate**  
needless towel costs!  
(No more buying and storing of towels)

\* **save**  
maintenance overhead!  
(24-hour service—no waste to empty)

\* **clean-up**  
littered washrooms!  
(More sanitary! No fire hazard!)



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Sani-Dri is the original and only complete line of dryers sold throughout the world. All models carry Underwriters' Seal and full 2-year guarantee. Write today!

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**THE CHICAGO HARDWARE FOUNDRY CO.**  
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warehousing  
and distribution  
problems?*

Let Lehigh untangle things for you! With our 35 years' experience and unmatched facilities, we know most of the answers to storage and distribution questions.

We have facts marketers will welcome... evidence that may prove our services can be more efficient and economical than operating your own warehouse and trucks.

Our five modern warehouses and delivery fleets can put your products quickly into the rich New York metropolitan area. We also operate the huge Horseheads center in upstate New York, and others in Atlanta and Richmond. Our big tank farm at Bayonne, N. J. unloads bulk liquids, stores and repacks for distribution at a saving. Lehigh saves you year round operating costs; you pay only for services *as used*. Every manufacturer and shipper should know the Lehigh story. It's good business. Write, phone or wire.

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Transportation Co.**

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Newark 5, N. J.



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representatives for promising the working millions a steadily increasing volume of leisure and security without a corresponding increase in productivity, or to condemn former generations of businessmen for being slow to see that our machine could turn out leisure and security as well as goods and services and jobs and profits. All of us are human, and at times all of us have been selfish and short-sighted.

### Action for Profit

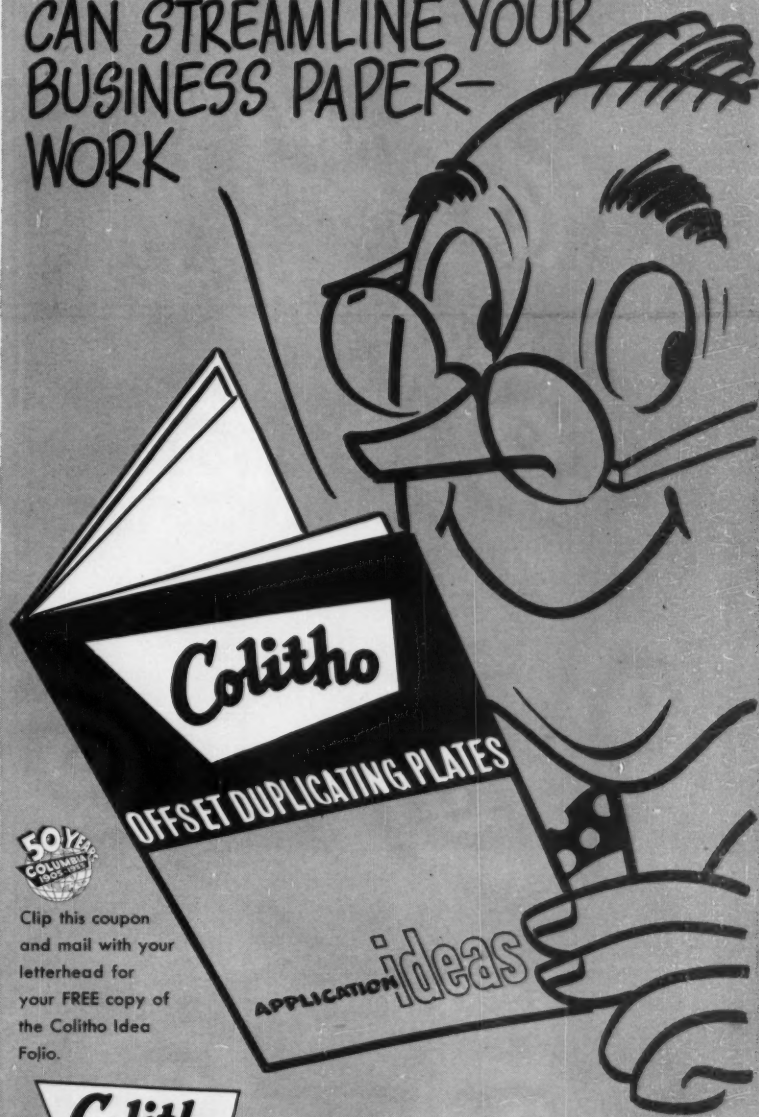
We all share the responsibility for the past. But the time has come for us to take a fresh look at the newer products of our Machine-For-Good-Living to see what can be done to save them, as a manufacturer does with a product which will have to be dropped from his line if it cannot be made and marketed at a profit.

The first and most obvious step, it would seem, is for all of us to start thinking and working in the same direction. The idea that the paths of business management and organized labor lead in opposite directions is completely outmoded. Both paths run practically parallel with each other and lead to Mr. and Mrs. Consumer's door.

All of us are concerned with the production and distribution of the same six products. It is important to all of us that all these products be sound as well as satisfying. Many of the differences which cause conflict between labor and management are rooted in suspicion and the lack of a sense of security—on both sides of the bargaining table. Yet the interests of both groups are common in that each is working for Mr. and Mrs. Consumer. As the ultimate purchasers of all goods and services, in the end they pay all of industry's bills, including payrolls, pensions, insurance, hospitalization, vacations, holidays, Social Security. Also, as we have seen, all taxes of every kind.

The situation is both complicated and simplified by the fact that all of us are consumers as well as producers. As producers, if we are on the payroll of business we naturally want the highest pay we can command, the shortest hours, and the best working conditions. If we are the owners or managers of enterprises which serve Mr. and Mrs. Consumer, we want the best return

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# Challenge Precision Equipment Now Featuring Two Types of Surface Plates!

**New!**

## CLOVIS BLACK GRANITE SURFACE PLATES

Meets Bureau of Standards specifications for Class A granite surface plates. Finished to a frosted, durable smooth finish that's as easy on the eyes as on delicate instruments. In 8 surface tolerances — from .002 to .00005 — Guaranteed for Accuracy.

**Special Analysis!**

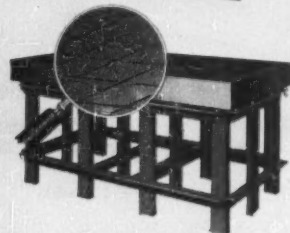
## HIGH-GRADE SEMI-STEEL LAYOUT SURFACE PLATES

High in compressive strength. Low in coefficient expansion. Precision ground or planer finished to exact trueness. In 16 standard sizes—from 12 x 18" to 54 x 144". As with Challenge Black Granite Surfaces, plates can be grooved and keyed together into an extended unit of uninterrupted smoothness.



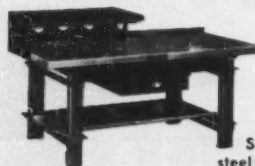
### CLOVIS-BLACK GRANITE SURFACE PLATES

A size for every precision job 8" x 12" x 2" to 72" x 144" x 16", with 0, 2, or 4 ledges. Guaranteed surface accuracy from .002 to .00005".



### SEMI-STEEL WELDING TABLES

For assembly, locating or welding. In 3 sizes. Includes all-steel stand and leveling screws.



### CAST-IRON WORK BENCHES

3 styles, 4 sizes, Welded Steel supports, tool box shelf, steel drawer with pilfer-proof lock.

785

## THE CHALLENGE MACHINERY CO.

Office, Factories, and Show Room  
GRAND HAVEN, MICH.



we can earn on our capital so that we can offer dependable dividends and security of investment to the investors whose money we "rent."

On the other hand, as consumers, all of us—workers, managers, owners—want the most we can get in goods and services for our dimes and dollars. This is the complication.

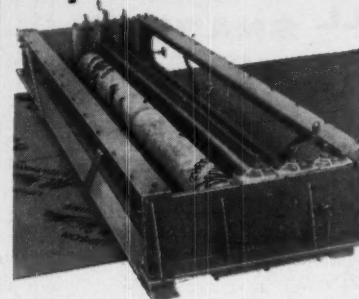
What simplifies the problem is that we are working for ourselves. If by working together in intelligent fashion we can develop ways to keep prices down, we shall to that extent protect the purchasing power of our "pay," whether we receive it in wages, salaries, bonuses, or dividends. Whereas, if we increase costs, without an offsetting increase in the productivity of man-hours of labor, or of the capital invested in the tools of production, we will lower the purchasing power of our dollars, and at the same time progressively reduce the value and dependability of the leisure and security products of our machine.

### Machine Management

In effect, the manager of any enterprise is a technician in balancing the operation of the machine he manages in the face of the opposing demands made upon it by owners, workers, and the consuming public. His responsibility is to the stockholders who supply the capital which provides the tools and facilities of production and distribution; to the long-range best interests of the workers; to Mr. and Mrs. Consumer; and to the economy as a whole. If, through avarice, shortsightedness, expediency, or lack of courage, he abets any of the interested groups in "grabbing off" more than its fair share of the productivity of the machine, he is doing all a disservice. For he is allowing the machine to get out of balance.

The leaders of organized labor also share this responsibility. When they sit down at the bargaining table they, too, become technicians in balancing. It is always popular to make a case for immediate benefits for wage or salaried workers. It is equally unpopular to point out the long-range danger of granting them a disproportionate share of the fruits of the productivity of their labor and the tools they use. But it is necessary to do this if the leisure-product of our machine is

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Here's the practical modern way to print trademarks, brand names, part numbers, code-dates, continuous or repeated designs on any material processed in a web—sheathing, wallboard, screening, linoleum, gasket material, paper, plastics, cloth, laminates, etc. Gottscho web-printers operate as part of your present production set-up, eliminate cost of printing as a separate operation. Clean, permanent impressions assured on anything from .001" to 1.0" thick... flexible or rigid... 1" to 74" wide. Uses fast-drying inks of any color for light or dark surfaces.

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boost  
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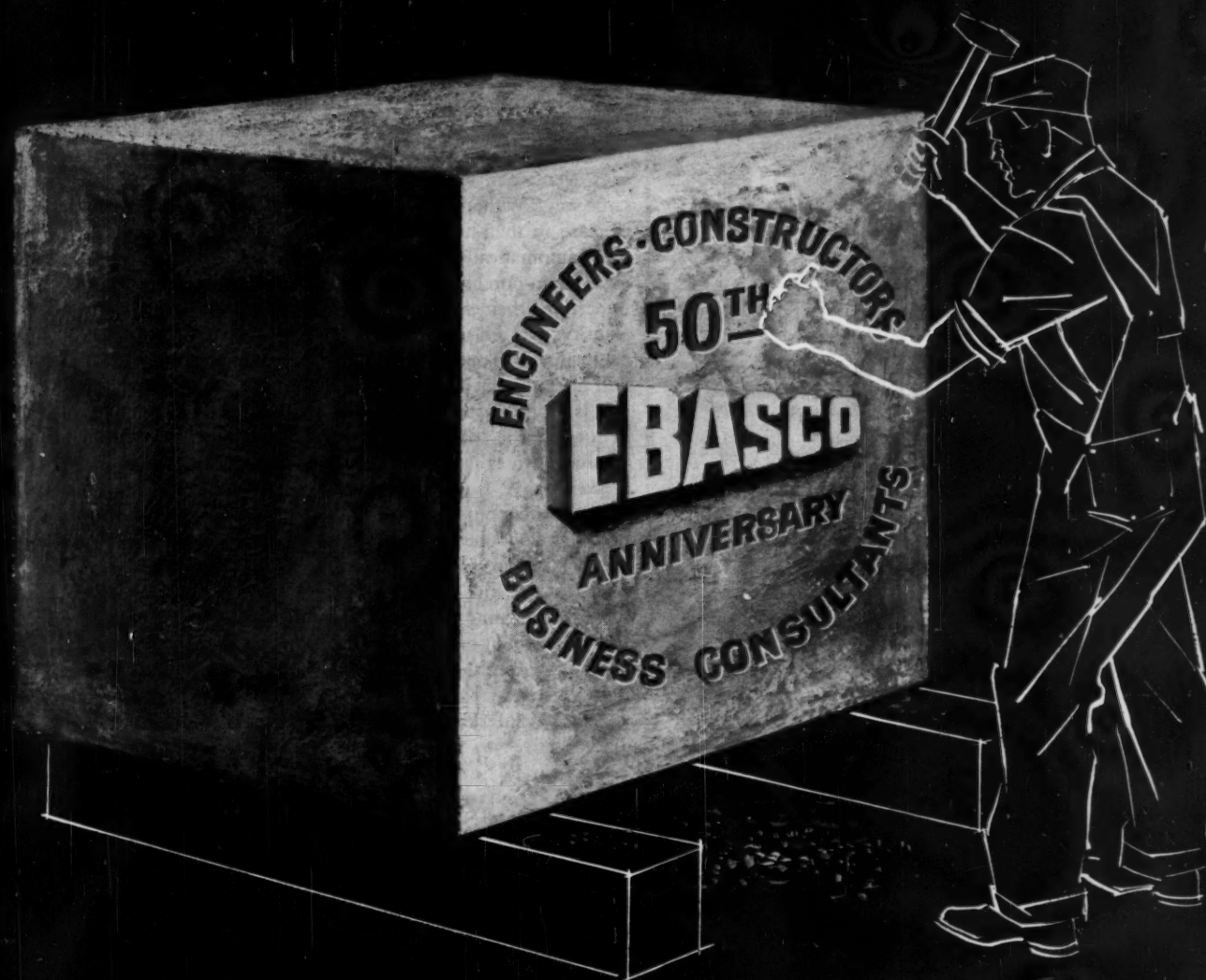
Automatically prints large, legible numbers on file folders, job tickets, time cards, etc., makes for easier reading, faster work. (Provides consecutive, duplicate or repeat numbering.) See your dealer or let us send our catalog—"How to Select a Numbering Machine."

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Your new plant, too — whatever its size or function — will benefit from the broad experience which Ebasco will apply to every aspect of the project — from site selection and preliminary planning, through detailed designs and finished construction, to successful and economical operation.

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# TORNADO

hits a high note  
in shop cleaning at

Valco

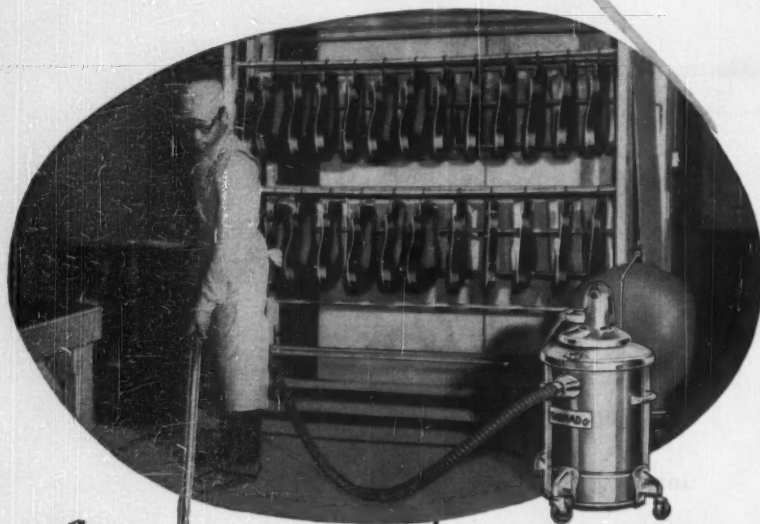


Valco Manufacturing Co., Chicago, Illinois, is one of the largest manufacturers of precision built electronic guitars and amplifiers.

In the manufacturing of fine musical instruments at Valco, Tornado plays an important part in keeping shop areas clean and dust-free.

From the woodworking shop to the painting and finishing rooms, Tornado's 325 M.P.H. suction speeds up every cleaning operation.

Find out how faster, easier Tornado cleaning can reduce your cleaning costs—actually improve production. Write for literature (Bulletin 660) and an "in-your-plant" demonstration.



## NEW TORNADO JUMBO CONVERSION KIT

With this kit the motor unit from a Tornado vacuum cleaner converts any standard 55 gallon drum into a Jumbo Vacuum Cleaner.

## 5 PIECES OF CLEANING EQUIPMENT IN ONE MACHINE

- Standard Tank Type Cleaner
- 55 Gallon Cleaner
- Portable Electric Blower
- Air Sweeper
- Insecticide Sprayer

# BREUER ELECTRIC MFG. CO.

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TAKES THE IN DUST OUT OF INDUSTRY

not to be turned into mass unemployment and the security-product into a will-o'-the-wisp through inflation.

Whenever the organized workers in any of our great basic industries force an increase in wages, or a decrease in work-hours at the same wage, without a proportionate increase in man-hour productivity, they automatically subtract from their own purchasing power and undermine their present and future security. No amount of emotional eloquence or impassioned argument will alter this fact.

It is gratifying that at least some of organized labor's leaders are beginning to assume their share of responsibility. For example, in a labor convention speech the vice-president of one union recently stated that some of the semi-skilled members in his union's industry were now earning such high wages that they would have to mark time until other industries "caught up." This is "parallel approach" which is so sorely needed to-day to keep our sensitive machine in balance.

This kind of economic statesmanship is exceedingly important to

our national welfare.

Lately a new school of thought has developed: that our government should "guarantee" full employment, and even protect workers against the adjustments accompanying the increased mechanization represented by automation.

The government creates no wealth. There is no way it can guarantee employment except by some form of public works or service. Jobs so provided must be paid for by taxation. Since Mr. and Mrs. Consumer must in the end pay all taxes, their purchasing power will be reduced automatically by taxation, and they will be taken out of the market for some of the goods and services they would like to buy.

As for the fear of automation, it is the history of American industry that mechanization reduces production costs, and in so doing automatically increases the volume of goods and services that can be purchased by Mr. and Mrs. Consumer, and at the same time potentially steps up the production of jobs, profits, leisure, and security.

Ours is the most mechanized economy in the world, yet—thanks

## modern design—



quality materials and fine craftsmanship give Climax Club Smokers a measure of elegance that is instantly recognized by people of discriminating tastes. Styles for every need. Write for the new 1955 catalog and the name of the nearest supplier. Ask for brochure 4-DR.

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to the adjustability of American workers, who have time after time adapted their skills to new trades and production and distribution techniques when old industries have had to be replaced with new ones—our industrial system produces more of all six deservedly popular products than that of any other country.

#### Mutual Considerations

Neither labor nor management needs any government guarantee, if each will meet the problems of automation and underemployment in good faith and with a firm determination to keep our mass-production-distribution machine in balance through resourcefulness applied in a spirit of co-operation.

No miracle of happy semantics or no legerdemain of government guarantees will keep the machine running in balance, producing and distributing the "full-line" of six products which make up our high standard of living, if we violate sound economics.

This, then, is America's great contribution: a mass-production-distribution machine that will pro-

duce on a prodigious scale six deservedly popular products:

1. Goods (in steadily increasing variety and volume).
2. Services (that add enormously to the comfort of living).
3. Jobs (in which most American workers earn enough to buy the products of their own labor).
4. Profits (that benefit all of us, directly or indirectly).
5. Leisure (with enough energy left to enjoy it).

6. Security (reasonably dependable as long as all of us co-operate intelligently in protecting it).

This is the sobering responsibility which must be taken to the collective bargaining table by both management and labor, and into the Committee Rooms of Congress and our State Capitols and City Halls, where the budgets are set that establish our tax rates, and where social legislation is written.

THE END

An abridgment of a broader treatment of the subject in a copyrighted brochure, "Balancing America's Productivity," published at \$1 by The Updegraff Press, Ltd., Scarsdale, N. Y.

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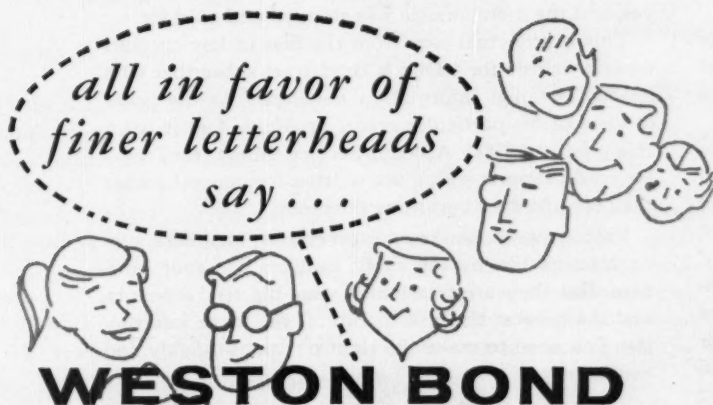
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# \$25,000 an order for and even the sales manager was scared!

For six years Teel Manufacturing Corp.\* had been selling appliances to Eagle Outlet Co.,\* even though payments had always been slow. At one time, two years back, Teel had found it necessary to turn the account over to an attorney for collection. But since they needed Eagle's aggressive salesmanship to maintain sales volume in the Hartford area, their business relationship was resumed when the bill was paid.

There were times when the Teel management wondered whether the additional sales volume was worth the worry of a continually past due account—and now this \$25,000 order, the largest yet.

These were the facts which the credit manager of the Teel Corporation presented to Dun & Bradstreet with the question, "Should we commit ourselves to \$25,000 at this time?"

The Dun & Bradstreet analyst assigned to the case investigated the background of the principal officer of the Eagle Outlet Co. He appraised sales and profit trends before, during, and since the year the account had been collected through an attorney. He observed that Eagle was a one-man business, but that the president was generally considered a good customer in spite of a habit of leaning rather heavily on suppliers for support. The analyst realized the slower-than-usual payments that had led to placement of the account with the attorney resulted from personal troubles of the president. These difficulties had caused him to neglect the business to the point where a loss was shown for the year.

As the Dun & Bradstreet analyst continued with his investigation, he concluded that—

1. the president's personal problem had been resolved
2. sales and profits had increased in the past two years

3. and it was increasing sales volume which maintained pressure on working capital and prevented a complete cleanup of all past due receivables.

Impressed by the president's demonstrated ability to keep his head above water in spite of limited working funds and by the clear-cut continuing improvement in finances, the analyst recommended that Teel increase Eagle's credit line and assume the calculated risk of continued slow payments.

The easy way would have been to turn down the order, but the analyst found a good reason for saying yes, and the merchandise was shipped and paid for.

This is an actual case from the files of key account reports written for a Dun & Bradstreet subscriber who needed detailed information *developed to the point of view of his particular credit problem*. And it is on this point that Key Account Service differs from regular credit reports which are written for general rather than specific credit granting purposes.

Problem accounts, key customers, key suppliers, sub-contractors can be the profit builders for your business. But they are frequently your big risk accounts, and the greater the risk to capital the more information you need to make the right decisions quickly and confidently.

If you are concerned about a big volume account with a continuing or long-term risk involved, talk it over with a Dun & Bradstreet Key Account analyst. He will work directly with you on your specific problem and at the completion of his investigation will give you a definite recommendation as to a course of action if you want it.

Call the Dun & Bradstreet office nearest to you and ask for the Key Accounts analyst.

\*names fictionalized for advertising purposes

**DUN & BRADSTREET, INC.** / offices in principal cities of the free world



# Executive BOOKSHELF

## How to Scrap

Like machine tools, the entire problem of depreciation is not one that can be easily written off. Authors Eugene L. Grant and Paul T. Norton demonstrate this quite expertly in the new book, *Depreciation*. These two expert guides to the borderland area between accounting and engineering provide the reader with a vivid understanding of the various methods for recovering capital.

A few easy-to-read paragraphs clear up the very common misunderstanding about the nature of reserves for depreciation which some people look upon erroneously as actual funds when projecting industry-wide buying plans. Not aimed at only accountants and other specialists, the book devotes considerable space to the ways in which the treatment of depreciation affects many vital management decisions.

The Ronald Press, 15 East 26th Street, New York 10, N. Y., 504 pages, \$7.50.

## Atoms at Work

Information for the layman about atomic energy has often been both fragmentary and forbidding. David O. Woodbury, author of the new book, *Atoms for Peace*, has scanned the store of scattered published information with the patience of a prospector and added to it interviews with scientists and others.

The result is a sprightly, easy-to-read account of the progress man has made in taming the gigantic genie, atomic energy, which escaped from the first pile about twelve years ago. The accomplishments in putting atoms to work in industry, medicine, agriculture, and other fields are clearly chronicled along with the probable future developments in many lines. Neither tediously technical nor oversimplified, this volume offers an intriguing introduction to isotopes, reactors, breeders, and other essentials of man's journey into the unknown.

Dodd, Mead & Company, 432 Fourth Avenue, New York 16, N. Y., 259 pages, \$3.50.

## New Business Novel

A new portrait has been added to the gallery of fictional business men. Novelist John P. Marquand, renowned for his portraits of *The Late George Apley*, *H. M. Pulham, Esquire*, and Charley Gray (in *Point of No Return*) has devoted his skills to the executive in manufacturing in his new book, *Sincerely, Willis Wayde*. Less than laudatory but certainly not caustic, this engrossing novel depicts an alert, aggressive, and undeniably warm-hearted business man as he moves through life lonely as a cloud.

The absorbing plot, which holds one's interest like an overheard conversation, spans the years 1922-1954 as it charts the unrelenting rise of Willis Wayde from apprentice to belting-industry tycoon. But more important, the author has created a compassionate though softly satirical character study of a modern business man, an accomplishment not achieved in some recent highly successful and tensely plotted business novels.

Little, Brown & Company, 34 Beacon Street, Boston 6, Mass., 511 pages, \$3.95.

## Sharing Made Easy

Although only a small percentage of American business has profit-sharing plans in operation, many companies have found profit-sharing an effective way to share management enthusiasm with employees.

A new study, *Profit Sharing in American Business*, concentrates on the operations of various plans rather than the over-all scope of profit-sharing. Author Edwin B. Flippo gathered information from 350 companies in order to discover the most successful ways to share profits. He discusses in detail the conditions needed before a plan can be instituted as well as the means for getting through that most trying period for profit-sharers—the profitless year.

Not a tract for or a screed against profit-sharing, this data-

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loaded volume is a scholarly attempt to relate profit-sharing to morale, productivity, unionization, and many other factors.

*Bureau of Business Research, College of Commerce and Administration, The Ohio State University, Columbus 10, Ohio, 188 pages, \$3.*

### Key to Keynes

To understand the writings of economist John Maynard Keynes is to understand most of modern economic thought. No twentieth century economist has had a greater influence on both academic and practical economics than Keynes, who is the subject of a new study by Harvard University economist, Seymour Harris.

Entitled *John Maynard Keynes, Economist and Policy Maker*, this new book is concerned with Keynes both as an economist and as an individual. Unlike Harrod, who has written a much more detailed biography, Harris did not know Keynes personally but only through his work to which Harris has given monkish devotion for decades.

This easily read volume provides the non-economist with a fresh approach to the controversies which have raged quietly around Keynes and describes in detail Keynes' influence on governmental measures.

*Charles Scribner's Sons, 597 Fifth Avenue, New York 17, N. Y., 234 pages, \$3.*

### Lucrative Layouts

Bringing men, materials, and machines together in the proper arrangements is a task which has vexed many people responsible for plant layout. Whether you are designing a new plant or refitting an old factory for modern methods, the new volume, *Practical Plant Layout*, by management engineer Richard Muther, will prove handy as a wrench.

This lavishly illustrated volume abounds with layout designs, forms, checklists, work sheets, and other essentials so as to provide detailed directions for turning plans into plants. The author stresses cost-cutting methods, human conditioning, and the importance of communication during a period of plant changes. Included are layouts for machine shops, assembly lines, storage areas, and even offices.

*McGraw-Hill Book Company, 330 West 42nd Street, New York 36, N. Y., 363 pages, \$12.*

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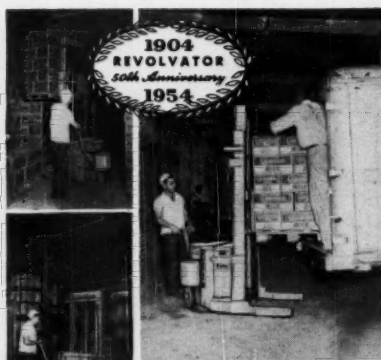
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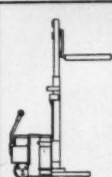
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Illustrated above is the high lift model Go-Getter—a favorite of the food producers—accepted throughout all industry. In 2000-3000 lb. capacities—remarkably adept in narrow aisle work, the Revolvator Go-Getter high lift truck permits great economies in warehousing.

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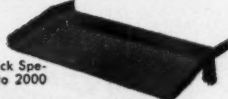
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# Here and There in Business

## WHAT'S NEW

### AS OBSERVED BY THE EDITORS

**Driverless tractor** that will follow a pre-determined path through the plant, and stop and start as desired without any personal attention is Barrett-Cravens' latest achievement. Barrett-Cravens, 630 Dundee Road, Northbrook, Ill., which introduced a remote-controlled, push-button-operated unit, the *Radox*, two years ago, has carried the principle one step further in its new *Guide-O-Matic*. This new tractor is controlled by signals

useful information on plant site selection, plus several lists of planning and development agencies. *Organized Industrial Districts* is obtainable from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. for 65 cents.

**New fire extinguisher** that uses nitrogen instead of carbon dioxide as the propellant, to permit operation at temperatures as low as minus 65° fahrenheit, is now available from Ansul Chemical Company, Marinette, Wis. Made in 4 and 20 pound hand portable models and 150 and 200 pound wheeled units, the new low temperature extinguishers operate much the same as regular dry-type models, and are priced in the same range.

**For good plant housekeeping** there is a host of new machines. Among the latest:

A hydraulically-powered industrial sweeper, the *Hydra-Sweep* (picture below), manufactured by Industrial Sweeper Company, 2508—



18 South Main Street, South Bend 23, Ind. It features single pedal drive control, hand levers for brush adjustment, and rear-wheel steering, will run at speeds up to 6 mph.

A line of four industrial power-



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sweepers offered by Wayne Manufacturing Company, Pomona, Cal. Sweeping widths range from 24 to 58 inches.

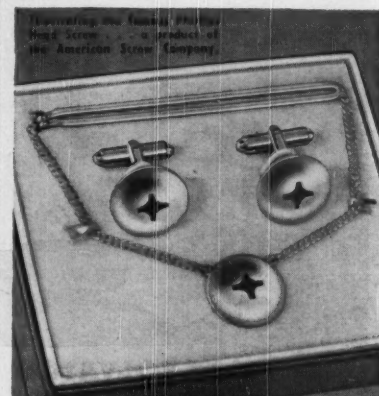
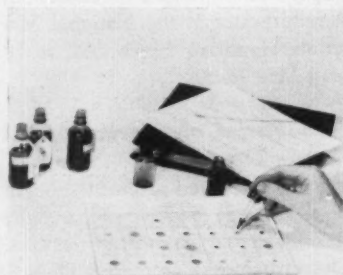
A heavy-duty vacuum cleaner, offered by The Black & Decker Manufacturing Company, Towson,



Md. It's supplied complete with a five-foot accordian-type hose, swivel-type intake pipe, upholstery nozzle, six-inch brush, and a crevice tool as standard equipment.

For picking up metallic scraps (nails, nuts, screws, chips, and the like), Magnetool Division, Multi-finish Manufacturing Company, 26341 West Eight Mile Road, Detroit 19, Mich., introduces a magnetic rotating-cylinder broom with a new load release mechanism and an offset handle for easy access to low clearance areas.

An oil test, that can be performed in the field and tells in a few minutes, whether the oil in a truck engine (gasoline or diesel; industrial or over-the-road) needs changing, is now offered as a service to fleet owners by Shell Oil Company. Called the ADC (Alkalinity-Dispersancy - Contaminants) Oilprint Test, it is based on analysis of oil blots on filter paper, plus a chemical color change that indicates degree of acidity or alkalinity. According to Shell engineers, the test not only shows when the oil



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Within the last few years rapid strides have been made by Yoder in widening the scope and raising the speed of cold process electric-weld pipe and tube making. In a new line of tube mills perfected by Yoder, many non-ferrous metals can be induction-welded in gauges up to .154" and at speeds approaching those attained in resistance-welding steel tubes.

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New compact Yoder "4-in-1" Welding Transformer is the last word in resistance-welding steel pipe and tubing in sizes up to 24" diameter.

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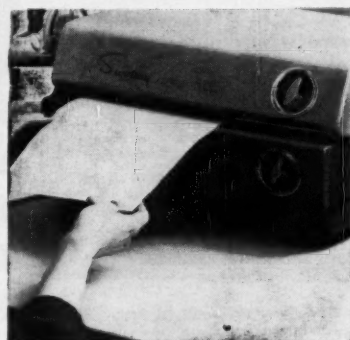


**Electric Weld  
TUBE  
MILLS**

needs changing, but may also warn of serious trouble (cracked pistons, antifreeze leakage, improper function of cooling system, and so on) before actual breakdown occurs. As indicated above, the test kit (see photograph) will be available to Shell's commercial and industrial customers, but not to individuals or service station operations for the time being.

**Photocopy machines** are getting smaller and the dry process gets more important, as two more companies introduce new products:

A unit which makes "dry copies in about four seconds," is the "Secretary," (picture top). It is 17 inches square and 9 inches high.



does the job in one operation—no liquids, negatives, or master copies—and with lights on. Offered by Minnesota Mining & Manufacturing Company, Dept. G5-38, 900 Fauquier Street, St. Paul, Minn.

The second machine, also using the dry process, is the Apeco Dial-A-Matic Auto-Stat (picture bottom), being marketed by American Photocopy Equipment Company, 1920 West Peterson Avenue, Chicago, Ill. The unit will take paper up to 15 inches wide, prints in about 30 seconds.

**Hard-top decals**—decalcomias that have a special, scratch-resistant surface—are offered specifically for industrial application by



211,500 square feet of Milcor Cellufloor are being erected in Baltimore's new Commercial Credit Building.

## COMMERCIAL CREDIT INVESTS

### IN THE FLOOR OF THE FUTURE—

## MILCOR CELLUFLOOR

The new Commercial Credit Building in Baltimore is to be one of the finest and most modern structures of its kind. Designed by Harrison and Abramovitz and constructed by Consolidated Engineering Company, it will have the last word in electrified sub-floors.

Milcor Cellufloor, latest cellular floor development is truly the "Floor of the Future." It meets the changing, growing need for electrical flexibility to provide for electronic office equipment and business machines. Its closely spaced raceways permit the installation of communications or power outlets at virtually any point on the floor. Furthermore, these outlets can be relocated—or new ones added—without expensive alterations.

#### Only Milcor Cellufloor offers all of these features:

- Structural strength of close cell spacing—eight steel webs every 24 inches.
- Potential electrical outlet every 6 inches of exposed floor.
- Unexcelled protection of Inland Ti-CO<sub>2</sub> galvanizing.
- Safe working floor for all trades during construction.
- Lower over-all building cost—wood forms, staging and shoring eliminated—faster construction—earlier occupancy.

We'll be happy to send further information at your request.

#### INLAND STEEL PRODUCTS COMPANY

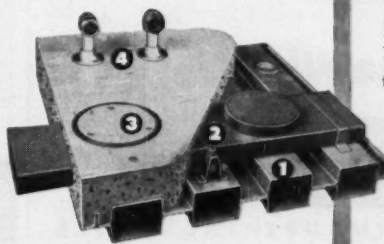
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†Ti-CO<sub>2</sub> is Inland Steel's new, non-flaking, continuous galvanizing (Sendzimir) process.

#### COMMERCIAL CREDIT BUILDING BALTIMORE, MARYLAND

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STRUCTURAL ENGINEERS:	EDWARDS AND HJORTH NEW YORK CITY
ELECTRICAL ENGINEERS:	EDWARD E. ASHLEY NEW YORK CITY
GENERAL CONTRACTORS:	CONSOLIDATED ENGINEERING CO., INC. BALTIMORE
ELECTRICAL CONTRACTORS:	RIGGS, DISTLER AND CO. BALTIMORE
ELECTRIFICATION:	WALKER BROTHERS CONSHOHOCKEN, PA.

Milcor Cellufloor (with Walker electrification) has (1) closely spaced cells protected by Ti-Co galvanizing; (2) large header duct that carries wiring from distribution point to panel cell; (3) easy-access units that are inset to accommodate floor covering; (4) outlet fittings for telephone and power.



**MILCOR**  
**CELLUFLOOR**

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M-187A



## ELIMINATE BATCH PROCESSING

combine movement and processing  
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**WOVEN WIRE CONVEYOR BELTS**

Whether it's copper brazing at 2050°F, glass annealing at 1000°F, wet processing, or flash-freezing at sub-zero temperatures, all-metal woven wire conveyor belts can help cut your operating costs. Continuous, uniform processing at controlled rates of speed eliminates profit-stealing batch handling and increases production.

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Write for your **PERSONAL COPY of 130-PAGE REFERENCE MANUAL** illustrating and describing woven wire conveyor belts. Gives mesh specifications, design information and metallurgical data.



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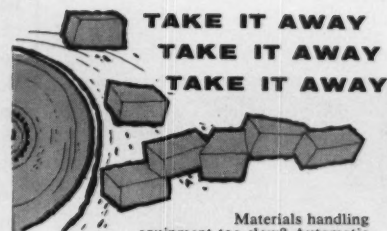
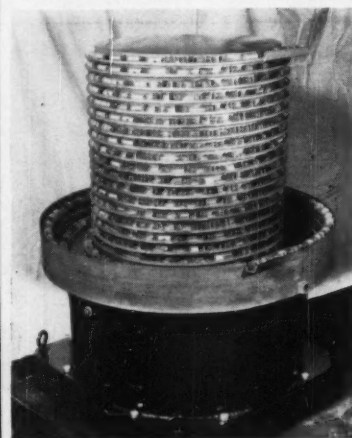
Palm, Fechteler & Company, Weehawken, N. J. The company says they can be applied to almost any painted surface, are particularly good for wiring diagrams, trademarks, and instruction plates.



A new microfilming unit, the "Reliant," is announced by Recordak Corporation, subsidiary of Eastman Kodak Company. Designed for desk-top use, the machine gives a choice of three reduction ratios (40 to 1, 32 to 1, and 24 to 1), and three filming methods (duplex, duo, and standard). Two rolls of film may be used simultaneously for duplication of records.

**Pocket magnet**, set in an aluminum holder that looks—and handles—like a mechanical pencil, is made by Wendt-Sonis Company, Tenth and Collier Streets, Hannibal, Mo. It has a standard pocket clip, weighs only half an ounce, will pick up objects weighing nearly half a pound. Price: \$1.10.

**Parts feeder** is adapted for washing and drying small parts by filling the feeder bowl with deionized water, allowing excess water to drain out through holes in the spiral. Syntron Company, which makes the feeder, notes that the pulsating movements of the device



Materials handling equipment too slow? Automatic production machinery too fast? Then materials handling obsolescence is draining your profits.

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International Amphitheatre, Chicago  
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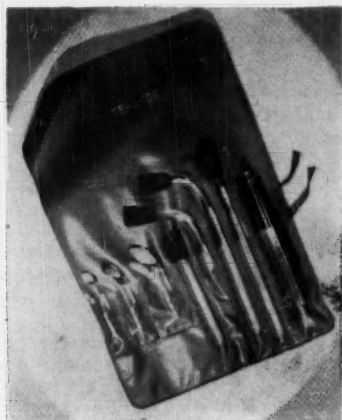
give to

AMERICAN CANCER SOCIETY





assist in the washing operation, while making it possible to do the job automatically.



**Inspection kit** for lighting hard-to-see areas is offered by General Scientific Equipment Company, 2700 West Huntingdon Street, Philadelphia 32, Pa. The *Syte-Ayde* is a flashlight unit with a set of light-transmitting rods and three dental-type mirrors. Kit sells complete postpaid for \$5.50.

**Color selector**, for industrial as well as commercial use, helps match and mix colors, makes it possible to try out several different shades in combination. Called the *Color Harmonizer*, it's a bound volume of 100 color plates, each with two windows through which harmonizing colors may be viewed. Sherwin-Williams Company, Painter-Maintenance Division, Cleveland 1, Ohio, puts it out.

**A new handling device**, the Walkie-Work-lifter, has been added to the materials handling line of Economy Engineering Company, 4511 West Lake Street, Chicago 24, Ill. Available in height ranges from 60 to 110 inches, the unit has a capacity of 1,000 pounds.

**Electronic computer results** printed at a speed of 5,000 characters a second, is the claim of Burroughs Corporation for its new "Electrographic Recording" unit. Still in the laboratory stage, the present unit is being used for research on its potential for business and industrial use. Operation is in three stages: Transfer of characters (electrostatic charge pattern); a dry ink bath to make characters visible; and a hot plate "fixer." Coated paper runs through at a



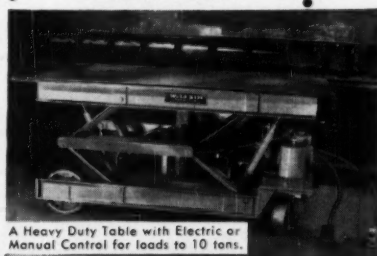
## MARSHIAN FOUND DIRECTING SHIPMENTS AT FRUEHAUF TRAILER CO.

Dependable MARSH Stencil Machines address Fruehauf shipments fast. Permanent, legible stencil addressing, will speed your product handling too! Eliminates lost shipments. Pays for itself with labor saving. Prove to yourself that MARSH Stencil Marking is superior to your present methods.

**FREE:** Stencil cut with YOUR NAME, ADDRESS; and "The Marshian Story." Clip this ad to business letterhead, with your name. MAIL TODAY! MARSH STENCIL MACHINE COMPANY, 62 Marsh Building, Belleville, Ill. U. S. A. 69

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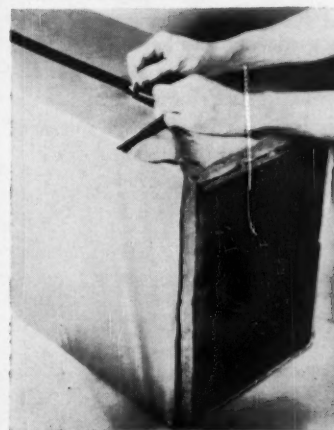
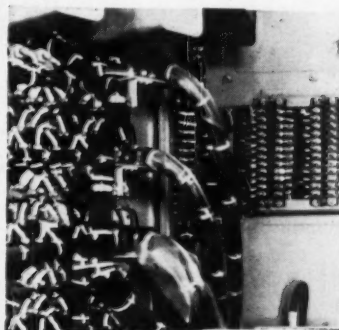
**WEST BEND EQUIPMENT CORP.**  
MATERIALS HANDLING ENGINEERS

303 WEST WATER STREET • WEST BEND, WIS.

speed of 44 feet per second. Other applications for the machine include high speed labeling or strip printing, page printing, teletyping and telemetering, and facsimile and duplicating applications.

**New press** for compacting powdered metals features individually-adjusted components (floating die and core rod, constant-head filling shuttle). It's said to be able to hold unusually close tolerances (less than a thousandth on concentricity of holes in small gears, for instance), and to permit unusually high production rates. Baldwin-Lima-Hamilton Corporation, Philadelphia, Pa., is offering the new press design in three models.

**Zip-on plastic covers** for plant piping are now being made of Bakelite *Krene* vinyl film by Miracle Adhesives Corporation, 214 East 53 Street, New York 22, N. Y. Called *Protektinsul*, the covers are simply wrapped around ducts and



conduits, closed with a plastic zipper, and sealed at the ends with vinyl tape and a brush-on coating. Covers are made to fit insulated pipe from one-half to 33 inches in diameter, in lengths up to 100 feet, and are said to provide electrical insulation as well as protection against corrosion.



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of quality pencils



## A red-nosed Fokker slowly spun to earth



AT 4:35 P.M., on October 30, 1918, a lone Spad biplane, marked with the symbol of the "Hat-in-the-Ring" Squadron, hawked down through the quiet skies over Grande Pré. Seconds later, a twenty-round burst of its guns smashed full into the center of a low-flying Fokker and sent the German plane swirling earthward like an autumn leaf.

The C.O. of the squadron, Captain Eddie Rickenbacker, had downed his last enemy plane of the war, setting a record for aerial combat never equaled: 26 victories in 7 months. It made him the American ace of aces.

A year earlier, his mother had written, "fly slowly and close to the ground"; but it was advice that Eddie Rickenbacker—like many of his fellow Americans—has never been able to take. His calculating courage, ingenuity and drive are typical of our greatest asset.

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## Safe as America—U. S. Savings Bonds

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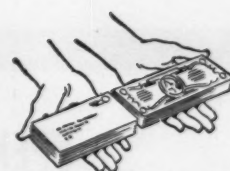


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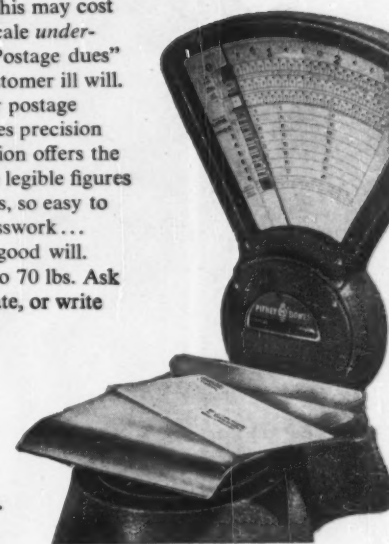
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# A Great Year

Newsworthy accomplishments in 1954, and plans for the future as well, are shown in our latest Annual Report to Stockholders.

Construction of a sixth power plant, at River Rouge, progresses on schedule. By 1956, the first two units, 260,000 kilowatts each, should be producing the extra power that will be needed by then in fast-growing Southeastern Michigan.

As a member of the Atomic Power Development Associates, we continue our search for an economical way to produce electric power from nuclear fuels. This research work has now advanced to the stage where a full-scale testing project is included in the 1955 program.

To learn more, send for this report. Write our Treasurer, 2000 Second Avenue, Detroit 26, Michigan.

## THE DETROIT EDISON COMPANY



SERVING MORE THAN HALF THE PEOPLE OF MICHIGAN

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You can bring in more telephone orders by using the *Long Distance Call-Collect Plan*.

You simply invite your out-of-town customers to place their orders by Long Distance—Collect. Your salesmen can let them know, you can write them a letter, or you can use stickers specially designed for this purpose.

The Call-Collect Plan puts you within easy reach at ordering time. Helps you give customers fast, personal service. Brings you new business between salesmen's visits. Opens new markets.

It's easy to set up. The results are big and the cost is small.

You can prove that the Call-Collect Plan pays in *your* business by trying it—and keeping a record of orders received. A telephone company representative will gladly help you work out the details. Why not call your Bell telephone business office today?



### LONG DISTANCE RATES ARE LOW

*Here are some examples:*

New York to Philadelphia.....	50¢
Cleveland to Pittsburgh.....	60¢
Des Moines to Minneapolis.....	85¢
Dallas to Chicago.....	\$1.50
Los Angeles to Boston.....	\$2.50

These are the *daytime* Station-to-Station rates for the first three minutes. They do not include the 10% federal excise tax.

*Call by Number. It's Twice as Fast.*

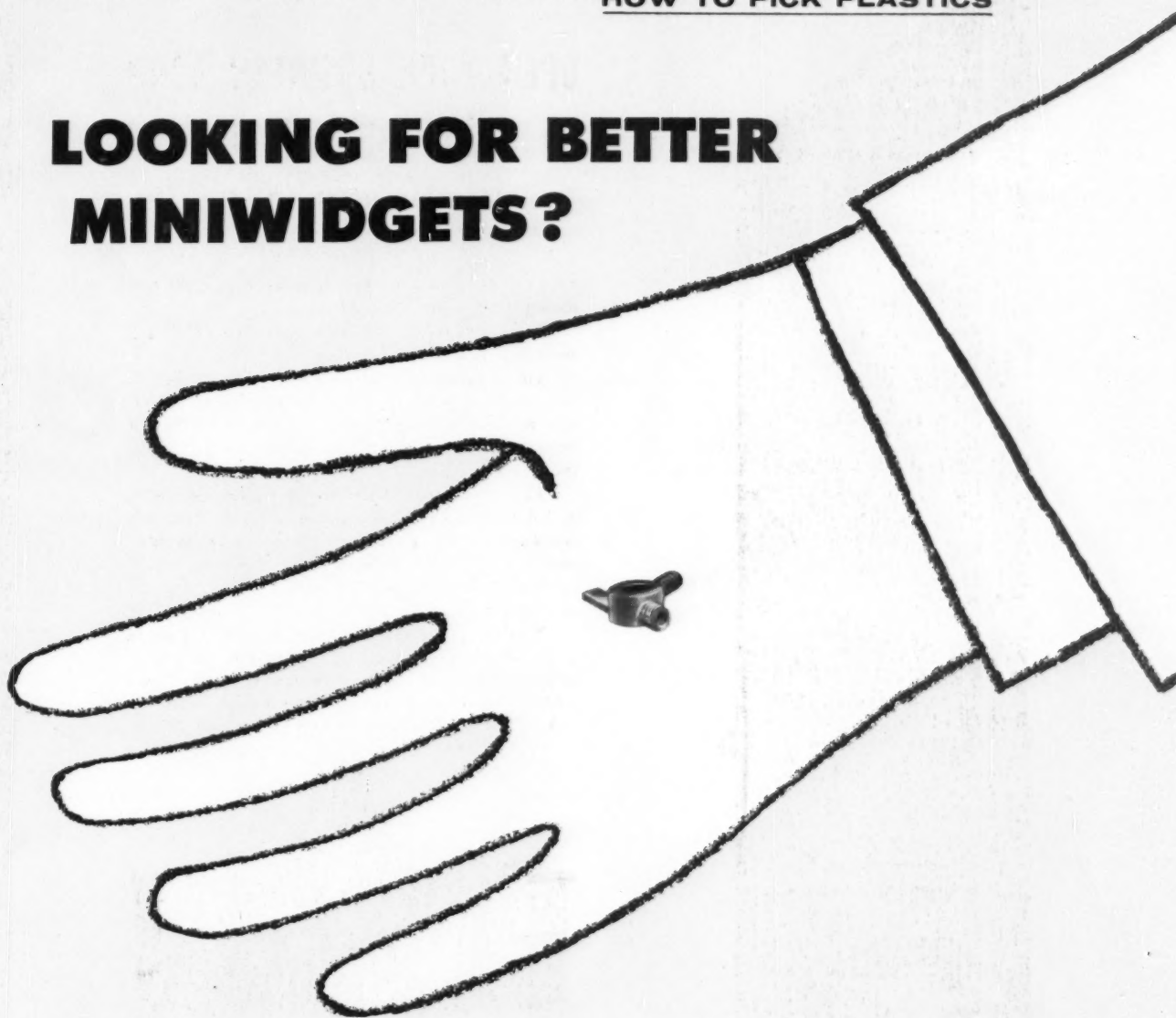
BELL TELEPHONE SYSTEM





HOW TO PICK PLASTICS

## LOOKING FOR BETTER MINIWIDGETS?



### FLUOROTHENE'S EXCEPTIONAL...

BAKELITE Brand Fluorothene is an unusual plastic. It's so tough you can hardly dent it with a hammer blow. It has excellent dielectric properties at temperatures as high as 392° F., even under moist conditions. It defies corrosion; resists fuming nitric acid, for example. It can be fabricated by conventional methods, with standard equipment. In toto—it's a plastic for jobs no other can do.

Whether your job calls for fluoro-

thene or can be served by other plastics, it is easy to select the right one. At Bakelite Company you can choose from vinyls, phenolics, polyethylenes, styrenes, epoxies, as well as fluorothenes. Here you will find the greatest variety and largest resources for plastics keyed to your needs. The booklet, "Condensed Reference File of BAKELITE Plastics and Resins," will acquaint you with the entire family. Write Dept. GL-93 for a copy.



**BAKELITE COMPANY**, A Division of Union Carbide and Carbon Corporation **UCC** 30 East 42nd Street, N. Y. 17, N. Y.  
The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

Keeping America on the GO...with **TIMKEN** Tapered Roller Bearings



## Where 1,995,672 farmers disappeared without a trace

**W**HILE you weren't looking, almost two million American farmers have been quietly dropping out of sight. In 1940, there were 8,833,324 farmers. Today, at latest report, only 6,837,652. Where did they go? And who's been feeding our growing population in the meantime?

Farm help of a different sort has taken their place. Tractors that save two billion man-hours a year. Mechanical pickers that do the work of 40 men. Grain combines that cut labor 85%. Millions of machines that help to

day's fewer farmers produce 40% more crops, feed 17 million more Americans.

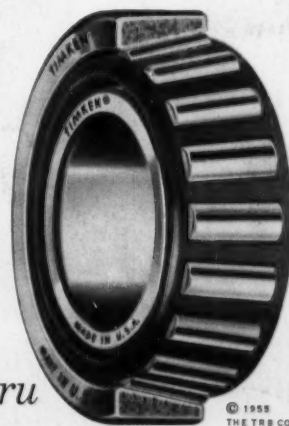
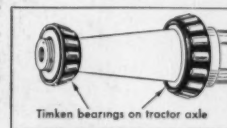
Today's farmer is the most mechanized in the world. And his tremendous output depends upon the trouble-free operation of his machines. That's why every make of farm tractor uses Timken® tapered roller bearings; why more and more implements are using them, too.

Timken bearings reduce breakdowns because they *roll* the load, practically eliminate friction. They last and last—normally as long as the machines.

Timken bearings are designed to

roll true, and they're made with microscopic accuracy to live up to their design. We even make our own steel to further insure quality. No other U. S. bearing maker does.

That's why farm machinery manufacturers choose Timken bearings to help keep America on the go. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIM-ROSCO".



Only **TIMKEN** bearings roll so true, have such quality thru-&thru

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